

Introduction
To
Respiropathy


G. M. V. DEVI

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An Introduction *to the* Science *of* Respiropathy

By

(Srimati)


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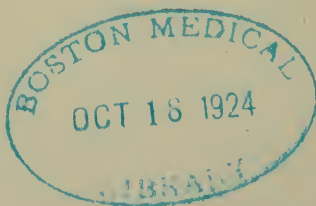
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Activity is the one great secret of Life. Everything is in motion; Movement is eternal. Respiration is the true manifestation of Life, while Breath is the highest manifestation of animal or human life.

PREFACE

THE following pages are the result of an attempt to place before the world a contribution to the value and duration of human life.

The aim of the book is to introduce the Science of Respiropathy for the prevention and cure of diseases — to give direct scientific knowledge of respiration by physiological laws.

The health and efficiency of the human body and mind have rarely, if ever, been more highly esteemed than they are today. That point of view which regards the human body as a living chemical mechanism is today not only the sure foundation of physiology and hygiene, but also helpful in the solution of many questions concerned with intellectual and moral behavior.

I have kept in view the body as a whole, in order that physiology may become the interpreter of Life's common physical phenomena and find in the Science of Respiropathy its natural, hygienic application. Today no science of healing is growing more rapidly into favor both in the medical world and among thinking people in general than the Science of Respiropathy.

To the scientific reader I wish to say that I have aimed to present the subject in a popular form and avoid the discussion of many purely scientific questions which might have been intro-

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duced. It has, at the same time, been my purpose to treat it in the light of one of the latest scientific discoveries.

My first knowledge and studies in the science and law of breathing were undertaken in my native land, India, with the Great Rishis, whose wisdom embraces all questions relating to life and health; next with philosophers and physicians, men of the medical profession, who were searching for the power which resists disease in nature and carries on its chemism. Backed with such knowledge, by a careful study and demonstration scientifically of the electro-magnetic forces of the body, its vital force, energies and chemism, I myself am responsible for the development of the Science of Respiriopathy in America. For twelve years I have been a practitioner of Respiriopathy abroad and in various cities in America with thousands of successful cures of so-called incurable diseases.

Of those who may examine this work with a critical purpose, I beg that they will think of it merely as an outline sketch which does not pretend to give the history of Respiriopathy, but only the nature, scope and method of the Science.

One prominent feature of this book should not be overlooked — the knowledge of nature's laws at work within man.

I wish to acknowledge some indebtedness to the Western Schools of Physiology, Biology, Anatomy, and Chemistry.

THE AUTHOR,
DR. G. MOHINI M. V. DEVI.

FOREWORD

RESPIROPATHY is a new word. It is a derivation from *respiro*, to breathe, and *pathos*, suffering.

Respiropathy is one of the latest and most magnificent discoveries of the scientific world. It is the science of a law of healing by natural methods through the principle of respiration by different modifications of breathing exercises, known as breathing potencies. No more telling proof is open to the modern world of the greatness of the idea than the wonderful cures that I have been accomplishing through unwearied, ardent application and practice.

Deep thinkers see indeed the important relation of this Science to the natural conditions for health. In the laws of this Science one stands face to face with scientific and physiological truth, solid and unchangeable. It is a science which studies those factors and forces which govern health, and those which are the cause of disease. The aid that the study and practice of Respiropathy furnishes is a contribution toward progress which will enable humanity not only to improve in health, but to preserve health and to rejuvenate the body.

The Science of Respiropathy is something more than an empirical science. It deals directly with the facts of the constitution of life and the means by which life is built up and sustained in the physical organism.

Each single breathing exercise is an instrument of scientific research, simple in its adjustments and infallible in its results.

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CHAPTER I

INTRODUCTION

LIFE, HEALTH, DISEASE

THE preservation of life, the prevention of disease, the improvement of health and knowledge of the human organism are objects to which nearly all persons will declare themselves favorable, since life, health and disease are the experience of every person. The processes of health, disease and cure are manifestations of that which we call Life.

“God breathed into man the breath of life and he became a living soul.”

Motion is breath or vibration. According to the rate of vibration is manifestation produced, whether in the physical, mental or spiritual constitution of mankind's being.

From the stage of life expressed in the mineral, that of merely vibrating, or respirating — a form of breathing — the next stage, that of the earliest vegetable cell or living protoplasm, out of which organic life arose, was due to an increase of chemical affinity, or chemical compounds which set up more complexity. We then see a continuous process of development of the protoplasm until it possesses the power of growth and reproduction resulting in the marvelous and complex organizations of the whole

vegetable kingdom, of animal and man. But besides the protoplasmic chemical changes, there is another chemical process at work in the vegetable kingdom, that of extracting and fixing carbon from the carbon dioxide of the atmosphere; and in the animal that of extracting and appropriating oxygen. This power may be termed vitality, since vitality is a certain process, the outcome of perfect correspondence of the energies. Hence, it gives to certain forms of matter all those characters and properties which constitute conscious life.

It is the introduction of sensation, of response, that brings differentiation, and so we find man differing from the other stages of life through the inner life principle — intellectual consciousness — which endows man's life with a spiritual ego, free will and choice.

Life is high or low according as the correspondence between internal and external relations is simple or complex, or we might say, partial or complete.

The sensible, physical organization of man begins with a simple cyst, diminutive, and formless, without body or parts, yet endowed with wonderful vital powers, and it draws to itself all that is necessary for the perfection of its embryo or foetal life by the chemico-vital laws of its existence. Later these functions become complicated, that is, more or less influenced, by the psychological or mental organization of the individual, which is known as the "quicken-

ing," the force of all forces coming from the great central source of all life.

This form of existence having been perfected, a new mode of life takes place. Everything required for the sustenance, growth and development of the body is appropriated to its proper office and use, until man, the highest development of life, becomes a microcosm having in his own body certainly all the more common, and probably every primary element in existence. Thus, we have carbon and oxygen, nitrogen and hydrogen, sulphur and iron, phosphorus and lime, ammonia and albumen, silica and silver and even gold and arsenic. It is not probable that there is a single essential element in nature that is not, in a more or less perfected condition, found in the human body. It is not to be supposed that these chemical elements exist within us in their gross or crude forms. In some cases they exist in considerable quantities, but always in a degree of refinement far beyond what is observed in their gross form. In many cases, they exist in forms so minute and proportions so diminutive as only to be detected by the most delicate appliances of science. We find life in a thousand instances thriving and striving against influences the most injurious or inimical. Sometimes an organ or faculty becomes so changed from habit or education, as to become perverted, or an entire new faculty may be called into existence. Life contains within

itself only one-half of what is necessary to life — the other half is contained in its environment. This will be explained in the chapter under the head of Life and Its Environment, or Respiropathic Hygiene.

The great law of organic life, the survival of the fittest, finds its response and exemplification in mankind, as elsewhere in the domain of nature.

HEALTH

Health is nature at work in man under natural conditions.

When the influence of vitality is undisturbed and the organism is supplied with its necessary pabulum or nourishment, health is the result. Good health of mind and body depends upon the perfect work performed by all the organs of the body. In order that these organs may exercise their proper functions, the individual must lead a rational hygienic life. Certain general principles must be observed by all; otherwise sooner or later the penalty is paid in impaired health.

It is a lamentable fact that the majority of humanity have little real knowledge of their own bodies. Physiology as commonly taught to children is of very little practical use. To teach a child from 12 to 14 of the two hundred and more bones in the body, and say little or nothing about their preservation and the necessity for healthy bones, or of their relation to the blood, stands for nothing. The importance of excretions for good health is another portion of phys-

iology entirely overlooked. It lies within the hands of the parents as well as the teachers of physiology to wield a greater influence toward a better knowledge of physiological laws, as a factor both for better health and for better morals.

Health is perpetual youth; that is, a state of positive health. Merely negative health, the keeping out of a hospital or out of a sickbed for a number of years is not real health. "Health is to feel the body a luxury, as every vigorous child does, as the bird does when it shoots and quivers through the air, not flying for the sake of the goal, but for the sake of flight; but neither the bird nor child can enjoy and realize the full cup of physical happiness like an adult, or when character is mature. As the flower is better than the bud, so should the fruit be better than the flower."

It should be borne in mind that there is such a thing as over-exertion, which is often found among athletes, those practicing physical culture. The air of weakness and lassitude after violent exercise indicates that there is a congestion of the internal organs taking place, and the introduction of fatigue toxin into the system which may be the cause for nervous and muscular disorders later. The muscles have their limit in action as well as every other organ of the body.

Health and strength are not always identical; they are not synonymous terms. A person

may have great strength in his limbs, or in certain muscles about the body, but really not have good health. There are other tissues and organs in the human system besides the muscular; the healthy action of the lungs, heart, and stomach is far more important than great strength in the arms, legs or the back. It is here in this general exercise of all the muscles and parts of the body that the well-regulated system of Respiropathy in one of its departments known as Breathing Gymnastics, has its great excellence for the preservation of health.

There is such a thing as modified health, where, for instance, good health is found with an amputated limb. Nature in the case of deviations, deformities or even mutilations adapts herself to circumstances and still maintains her integrity, as far as the conditions will admit. The inherent vitality of the individual has much to do with his power of preserving health, as health is the harmonious action of the vital force and of the various functions of the organism; then it follows the more delicate the structure the more liable it becomes to fall into disorder or disease.

The sentient system helps often to disturb the health. The immense sway of mental phenomena, that of thinking constantly, never resting the brain, willing, fearing, hoping, worrying, etc., reflects upon the physical organism as well as it breaks adjustment in the mental. The more intellectual, refined and cultured the per-

son the more delicately are the balances adjusted. Health or disease in the final analysis is resident in the cell which is an individual living thing. If the individual cell embodies health, then there is health of body. The vibratory activity of the cell may be lowered through the decline of vitality brought about in a natural way by advancing age, but if the energies are kept to the normal tone that contributes to vitality even age can be prevented.

On the other hand, the inflow of vital force into the cells may be obstructed and their vitality lowered. The accumulation of waste and morbid matter in the tissues of the body naturally interferes with the inflow of life force and free harmonious vibrations of the cells and organs of the body.

There is a moral obligation resting on everyone to preserve and maintain the highest rate of health that is attainable, both of body and mind.

DISEASE

When the organism or any of its parts falls into disordered action, it is said to be diseased. The first manifestations of disease are usually upon the highest planes of the organism. Not until after these have been invaded and their action modified by the morbid process does it descend to the lower or more material planes of the organism. Thus, it is first the psychological or moral, then the sensational, then the func-

tional, and last of all the material or physical plane of our being that is invaded.

The first perceptions of diseased action are sensations of depression, melancholy or misanthropy; or they may assume a more violent or positive form of sadness or ill-humor or mental disquietude in various forms or degree. In some instances the morbid process does not extend to the lower planes, but expends its force in the first arena of its action, and the result may be hypochondria, insanity or an obsession. But in the usual course the next plane of the organism, the sensational, is invaded, and there are then manifestations of pain, uneasiness, aching or weariness. Some morbid conditions, such as neuralgia, etc., are characterized by these manifestations.

Pain is the cry of nature calling attention to some disorder and should never be treated as disease. It is wrong to suppress it without treating its causes. The practice of the medical art today is to suppress pain whenever found by giving opiates, aspirin, antipyrin, penacetin, or actanolid—all nerve killers. Any half-witted person can do that. But it requires a thoughtful person or physician to discover the cause of the pain and to heal it. It is wrong to take the so-called pain-killers, all of which contain one of these nerve destroyers. Health means living nerves. The energy which gives life to the body is nerve force; with dead nerves it is impossible to have this force. If this nerve

influence or energy which is supposed to be similar to electricity, but essentially differs from it, is weakened, the part supplied by it becomes weak, and weaker until paralysis, or a multitude of diseases known by other names are set up.

In the third perception of diseased action, the functions of the body become disordered, the appetite fails, the tongue becomes coated, the secretions obstructed, and some or all of the functions of the body are perverted or more or less impaired or arrested. Then we come to alterations of structure, localization of disease upon the body as in inflammation or lesions of parts, as in ulcers or as in cancer or scirrhus. Yet before any of these changes of structure could have occurred, it is evident there must have been also changes in the cell. And the direct cause is improper breathing. This will be explained in another chapter.

In the case of wounds, injuries or lesions of parts the first cause may be in the physical structure. The genesis of disease presents some interesting considerations. When an individual, community or nation has for a long period violated the laws of life and health, the violation seems to ultimate itself in the form of a particular corresponding malady or disease which having once manifested assumes a type and hence constantly tends to reproduce itself in new subjects; for instance, the cholera, first known in the early part of the 19th century,

from sluggish swamps and rice fields; and all infections and contagious diseases in general throughout the world, which have their rise, acme and declination, as well as vary in their character and degree of intensity from year to year.

In general all diseases may be classed as functional or organic. The functional disorders constitute a field of operation for psychotherapy and for various mental cures. In the field of organic diseases the influence of the mind as a preventive and curative agent is greatly curtailed. The mental states of mind contribute to the causation of organic diseases by producing preceding functional disturbances. The mind does not possess any direct power or influence over organic diseases such as it is able to exercise in the relief of functional disorders. Many diseases are functional when acute and become organic when chronic.

And what is disease? Disease is not an entity but a condition. It is not a thing but a relation. It is nature at work — the force of nature under unnatural or disobedient conditions, the transgression of the laws governing the physical being.

It is not unfrequently observed that several members of a family are subject to some certain disease or some morbid condition. The impression generally prevails that these diseases are inherited — and this under some circumstances is undisputed.

However difficult it may be to conceive that the vital principle, in forming for itself a body, does from some inherited germ or principle, form it of materials which at a certain period of life are subject to disease or dissolution in a certain form, it is quite reasonable that as each parent imparts to his offspring his own peculiarities in a degree, the tendency to be lean or corpulent, large or small, and so with the body constitution, to be either delicate or strong, there may be a tendency to assume or take on diseased action in a certain form.

It is not usually difficult to arrest such tendencies in the bud by Respiriopathy, as they only require to be understood and guarded against by proper habits and the use of Respiriopathy, the system of healing and prevention of disease which builds up from the very cell life.

CHAPTER II

RESPIRATION

RESPIRATION, the most important process carried on in the body, is that by which the tissues receive oxygen, and carbon dioxide is removed from the body. The assimilation of the former and the evolution of the latter take place in the tissues as part of the general process of nutrition.

The cell is the unit of the organic life of the body and is the true seat of oxidation. In studying the chemical changes which underlie cellular activity it is found that muscle fibers and gland cells, and, we may now add, nerve cells, take in oxygen and give out carbon dioxide. Without a constant supply of oxygen and an equally constant removal of the carbon dioxide, the maintenance of life would be impossible. This cell breathing is the essential act of respiration. Within the mechanism of the cell are found the conditions which lead to the union, direct or indirect, of oxygen with the proteids, the carbohydrates and the fats of the food, assimilated through the digestive process.

The environment of the cell is the lymph—lymph is the medium in which the cell lives—and it is from the lymph that the cell draws its oxygen. Consequently, the amount of oxygen dis-

solved in the lymph is generally comparatively small and would be removed altogether were it not constantly renewed from the blood. For similar reasons the lymph must be relatively rich in carbon dioxide, since it is this fluid which directly receives the gas (in solution*) from its source of manufacture, the working cell.

The general process of respiration may be considered under the following heads, viz:

1. The anatomy of the respiratory apparatus.
2. The mechanical movements of the thorax in respiration.
3. The chemistry of respiration; the changes in composition undergone by the air, blood, and tissues.
4. The nerve mechanism by which the respiratory movements are maintained and coördinated.
5. The circulatory system as a coördinating factor.

The respiratory apparatus consists essentially of:

1. The lungs and the air-passages leading into them, viz: the nasal chambers, mouth, pharynx, larynx, and trachea.
2. The thorax and its associated structures.

Larynx—The larynx is composed of firm cartilages, the thyroid, cricoid and arytenoid, united

*The gases, oxygen and carbon dioxide, are, of course, dissolved in the lymph and blood plasma. Gases exposed to a liquid are absorbed or dissolved by the liquid.

by ligaments and muscles, and contains the vocal cords, by the vibration of which voice is chiefly produced. There are two superior or false vocal bands, and two inferior or true vocal bands—formed by folds of the mucous membrane. They are attached anteriorly to the thyroid cartilages and posteriorly to the arytenoid cartilages, and are capable of being separated by the contraction of the posterior crico-arytenoid muscles, so as to admit the passage of air into and from the lungs. By their approximation the cords can entirely close the entrance of the larynx; but under ordinary conditions entrance into the larynx is formed by a more or less triangular opening between them called the *rima glottidis*. Projecting at an acute angle between the base of the tongue and the larynx, to which it is attached, is a leaf-shaped cartilage with its larger extremity free. This is called the epiglottis. The whole of the larynx is lined with mucous membrane, which, however, is extremely thin over the vocal cords. At its lower extremity the larynx joins the trachea.

Trachea—The trachea is a tube from 10 to 12 centimeters in length, 2 centimeters in diameter, extending from the cricoid cartilage of the larynx to the fifth thoracic vertebra, where it divides into the right and left bronchi. It is composed of a series of cartilaginous rings, which extend about two-thirds around its circumference, the posterior third being occupied

by transversely arranged non-striated muscle-fibres, known as the tracheal muscle. Being attached to the end of the cartilages it is capable, by alternately contracting and relaxing, of diminishing or increasing the lumen of the trachea. Opposite the fifth thoracic vertebra the trachea divides into a right and left bronchus; each bronchus then subdivides into two other branches which penetrate the corresponding lung about the middle of the inner surface.

Lungs—The lungs, in the physiologic condition, occupy the greater part of the cavity of the thorax. They are separated from each other by the contents of the mediastinal space, viz: the heart, the large blood-vessels, the œsophagus, etc.

A histologic analysis of the lung shows it to consist of the branches of the bronchi, their subdivisions and ultimate terminations, blood-vessels, lymphatics and nerves, imbedded in a stroma of fibrous and elastic tissue. The anatomic relations which these structures bear one to another is as follows:

Within the substance of the lung the bronchi divide and subdivide, giving origin to a large number of smaller branches, the bronchial tubes, which penetrate the lung in all directions. With this repeated subdivision the tubes become narrower, their walls thinner, their structure simpler. In passing from the larger to the smaller tubes the cartilaginous arches become shorter

and thinner, and finally are represented by small angular and irregularly disposed plates. In the smallest tubes the cartilage entirely disappears. With the diminution of the caliber of the tube and a decrease in the thickness of its walls, there appears a layer of non-striated muscle-fibres, the so-called bronchial muscle, between the mucous and sub-mucous tissues, which completely surrounds the tube and becomes especially well developed in those tubes devoid of cartilage. The fibrous and mucous coats at the same time diminish in thickness.

When the bronchial tube has been reduced to the diameter of about one millimeter, it is known as a bronchiole, or a terminal bronchus. From the sides of the terminal bronchus and from the final termination there is given off a series of short branches which so expand as to form lobules or alveoli. The cavity of the alveolus is termed the infundibulum. From the inner surface of the alveolus and the passageway leading into it, there project thin partitions which subdivide the outer portion of the general cavity or infundibulum into small spaces, the so-called air-sacs or air-cells. The wall of the alveolus is extremely thin and consists of fibro-elastic tissue, supporting a very elaborate capillary network of blood vessels. The bronchial system as far as the alveolar passages is lined by ciliated epithelium. The air-sacs are lined by flat epithelial plates of irregular shape,

termed the respiratory epithelium. The alveoli are united one to another by fibro-elastic tissue.

Pleura—Each lung is surrounded by a closed serous membrane (the pleura), one layer of which (the visceral) is reflected over the lung; the other (the parietal), reflected over the wall of the thorax; between the two layers is a small amount of fluid, which prevents friction during the play of the lungs in respiration.

Thorax—The thorax, the cavity in which the lungs are situated, is composed of the vertebral column, the ribs, the sternum, the diaphragm, and the muscles (intercostals) between the ribs and those which cover them. The vertebral column is rigid, and takes no part in any of the movements connected with respiration, but with a portion of it the heads of the ribs articulate. The ribs are connected posteriorly with the vertebral column, as stated, and anteriorly with the sternum by means of the costal cartilages. The general direction of the ribs is such that their vertebral extremities are higher than the sternal. The diaphragm is the lower boundary of the thoracic cavity, separating it from that of the abdomen. The central portion is tendinous in structure, while the peripheral portion is muscular. It is attached to the interior of the thorax and forms an arch with its convexity directed upward, the summit of the arch being at the level of the fifth rib. The intercostal muscles, as their name implies, are between the

ribs. The fibres of the external intercostal muscles are directed downward and forward, while the direction of those of the internal is upward and forward. The thorax is an air-tight cavity, closed on all sides by the ribs, muscles and skin, at the bottom by the diaphragm and at the top by the structures passing into it and by the cervical fascia and skin.

Blood Supply—The lungs receive blood from two sources: (a) the pulmonary artery, (b) the bronchial arteries. The former conveys venous blood to the lungs for its oxidation, and this blood takes no share in the nutrition of the deeper pulmonary tissues through which it passes. The branches of the bronchial arteries are nutrient arteries which ramify in the walls of the bronchi, in the walls of the larger pulmonary vessels, and in the interlobular connective tissue, etc. The blood of the bronchial vessels is returned chiefly through the bronchial, but partly through the pulmonary, veins.

The two main divisions of the pulmonary artery distribute the venous blood to the pulmonic lobules. As the lobules are approached a small arterial branch plunges into the wall of the lobule, in which its branches form a rich capillary network which surrounds and embraces the air sacs on all sides. The blood emerging from the capillaries is conducted by the converging system of veins — the pulmonic veins, into the left

auricle of the heart. The main function of the pulmonic apparatus and the pulmonic division of the circulatory apparatus is to afford a ready means for the exhalation of the carbon dioxide and the absorption of oxygen. In consequence of this exchange of gases the blood changes in color from dark bluish-red to scarlet red.

The consumption of oxygen and the production of carbon dioxide thus involve an interchange of these gases between the blood and the tissues (internal respiration) on the one hand, and between the blood and the air in the lungs (external respiration) on the other. But to carry out these gaseous exchanges a third factor is obviously necessary, namely, a means of communication between the two, so that the oxygen absorbed in the lungs may be carried to the tissues, and the carbon dioxide produced in the tissues be carried back to the lungs. This communication is provided by the circulation, which thus becomes an essential part of the respiratory mechanism.

Lymphatics—The lymphatics in the lungs are arranged in three sets: (1), Irregular lacunæ in the walls of the alveoli or air-cells; the lymphatic vessels which lead from these accompany the pulmonary vessels toward the root of the lung. (2), Irregular anastomosing spaces in the walls of the bronchi. (3), Lymph-spaces in the pulmonary pleura. The lymphatic vessels from all these irregular sinuses pass in toward

the root of the lung to reach the bronchial glands.

Nerves—The nerves of the lung are to be traced from the anterior and posterior pulmonary plexuses, which are formed by branches of the vagus and sympathetic. The nerves follow the course of the blood-vessels and bronchi, and many small ganglia are situated in the walls of the latter. The bronchial muscles are presumably in a state of tonic contraction and impart to the bronchial tubes a certain average caliber best adapted for respiratory purposes. Experimental investigations indicate that they are innervated by efferent fibres of the vagus nerve (broncho-constrictors and possibly broncho-dilators) inasmuch as stimulation of this nerve is usually followed by a contraction of the muscles and a narrowing of the lumen of the bronchial system. These muscles may also be thrown into increased activity by the inhalation of irritating gases and into tetanus by pathologic causes, as seen in the various forms of asthma.

It has been shown that under the most varying conditions 100 c.c. of arterial blood always contains approximately 20 c.c. of oxygen and 38 c.c. of carbon dioxide, and 1 to 2 c.c. of nitrogen; and that 20 c.c. is practically all the oxygen that this amount of blood can hold. The tissues do not remove all the oxygen nor do the lungs remove all the carbon dioxide from the circulat-

ing blood. From this it follows that so long as the amount of blood pumped by the heart in a given time remains constant, no more oxygen will be carried to the tissues, even if we breathe more deeply. In other words, increased ventilation of the lungs without any accompanying increase in the rate and force of the heart beat will not supply more oxygen to the tissues.

The beat of the heart is as important to proper tissue respiration as are the deepened breathing movements; and we find accordingly that these two events are closely coördinated. Greatly increased tissue respiration invariably carries along with it increased work on the part of the heart.

The passage of the oxygen from the alveoli into the blood and into the tissues, and the passage of the carbon dioxide from the tissues into the blood and into the alveoli is believed to be due to differences of pressure.

A large number of measurements of the respiratory exchanges under different conditions and activities of our life has shown that these are increased by the taking of food, by exposure to cold, by awaking from sleep, and above all, by muscular activity. The last three really belong under the one head of muscular activity; for when we are exposed to cold we move about more actively, or if we do not, we "shiver"; and the same thing is true of awaking from sleep. The taking of food does not lead to any remarkable increase in gaseous exchange, except when

one passes from a period of prolonged fasting to one of feeding; but this event is so abnormal that it may be neglected. Analysis, however, of all the causes mentioned above will show that the fundamental factor to be considered is nerve energy, that back of all the conditions effecting increased tissue respiration stands nerve stimulation.

And this increase is at times very great. Even the muscular activity necessary to maintain the erect position in sitting and standing, as compared with the complete relaxation of sleep, doubles the gaseous exchange; gentle exercise more than doubles that of rest; and vigorous, yet by no means excessive, exercise will increase it tenfold. Breathlessness usually indicates, in part at least, that the heart fails to respond properly to the demands made upon it—as these increases mean corresponding demands upon the heart; it is a warning that we are pushing the heart too hard, a warning which we will do well to heed. Generally it is also a warning that we are not getting sufficient muscular activity; the heart fails to meet the emergency of some unusual exertion because all along it has not been kept in proper training; so that while we should, as stated, heed the warning not to push the heart so hard for the time being, we should also act upon the equally important warning that it needs practice or training—a training which can be given only by reasonable, regular, muscular activity, or better, proper breathing.

Scientific breathing and the training of muscular activity are, therefore, not only the training of the muscles but also of the heart. But this is not all. The work of the circulatory and respiratory mechanism must be adjusted or co-ordinated, the one to the other. When, for example, deepened breathing movements rush the blood back more rapidly to the heart it becomes necessary for the heart to adjust the character of its beat to the new conditions; and this adjustment is the work of the nervous system. Time is, however, required to make the adjustment, so that it is wise to "warm up" gradually to more vigorous work. We can also understand how by physical training this process of adjustment comes to be shortened; for we have not only trained the heart by giving it more work to do, but we have also trained those portions of the nervous system which regulate its beat.

Experience teaches that the air during its sojourn in the lungs undergoes such a change in composition that it is rendered unfit for further breathing. Chemic analysis has shown that this change involves a loss of oxygen, a gain in carbon dioxide, watery vapor, and organic matter. For the correct understanding of the phenomena of respiration it is essential that not only the character but the extent of those changes be known. This necessitates an analysis of both the inspired and expired airs, from a comparison of which certain deductions can be made.

The results which have been obtained are represented in the following tables:

100 VOLS.	INSPIRED AIR	EXPIRED AIR
Oxygen	20.80	16.02
Carbon dioxide	Traces	4.38
Nitrogen	79.20	79.60
Watery vapor	Variable	Saturated
Organic matter	————	Trace

The amount of moisture present in air is an important factor in the preservation of health. If it be too dry, the air-passages are irritated, while if too moist there is produced a feeling of oppression.

The presence of the gases oxygen, carbon dioxide, etc., in the blood is demonstrated by subjecting it to the vacuum of the air pump into which they at once escape. An analysis of the gases obtained gives the following results:

Arterial blood, 100 vols.	{	Oxygen	20 vols.
		Car. Diox.	40 vols.
		Nitrogen,	$\frac{1}{2}$ vol.
Venous blood, 100 vols.	{	Oxygen	12 vols.
		Car. Diox.	45 vols.
		Nitrogen,	$\frac{1}{2}$ vol.

The changes produced in the blood by respiration, both external and internal, become apparent from a comparison of these analyses. The arterial blood while passing through the capillaries of the tissues loses eight volumes per cent. of oxygen, and gains five volumes per

cent. of carbon dioxide. The venous blood while passing through the capillaries of the lungs gains oxygen and loses carbon dioxide in corresponding amounts. These amounts will vary somewhat in the analyses of the blood of different individuals and under different physiological conditions. The volume of nitrogen is not appreciably changed.

The number of respirations which occur in a unit of time varies with a variety of conditions, the most important of which is age. The results of the observations of Quetelet on this point, which are generally accepted, are as follows: -

AGE	RESPIRATIONS PER MINUTE
1 year	44
5 years	26
15-20 years	20
20-25 years	18.7
25-30 years	15
30-50 years	17

From these observations it may be assumed that the average number of respirations in the adult is eighteen per minute, though varying from moment to moment from sixteen to twenty. During sleep, however, the respiratory movements often diminish in number as much as thirty per cent. at the same time diminishing in depth.

The time required for the passage of the

venous blood from the heart to the lungs and back again as arterial blood is about five seconds. A drop of blood makes the entire circuit of the body in about thirty seconds.

The volumes of air which enter and leave the lungs with each inspiration and expiration naturally vary with extent of the movement, though four volumes at least, may be determined: (1), that of an ordinary inspiration; (2), that of an ordinary expiration; (3), that of a forced inspiration; (4), that of a forced expiration.

By means of the spirometer the amount of the foregoing four volumes have been determined and named as follows:

1. The *tidal* volume, that which flows into and out of the lungs with each inspiration and expiration, which varies from 20 to 30 cubic inches (330 to 500 c.c.).

2. The *complemental* volume, that which flows into the lungs, in addition to the tidal volume, as a result of a forcible inspiration, and which amounts to about 110 cubic inches (1,800 c.c.).

3. The *reserve* volume, that which flows out of the lungs in addition to the tidal volume, as a result of a forcible expiration, and which amounts to about 100 cubic inches (1,650 c.c.).

After the expulsion of the reserve volume there yet remains in the lungs an unknown volume of air which serves the mechanic function

of distending the air-cells and alveolar passages, thus maintaining the conditions essential to the free movement of blood through the capillaries and to the exchange of gases between the blood and alveolar air. As this volume of air cannot be displaced by volitional effort, but resides permanently in the alveoli and bronchial tubes though constantly undergoing renewal, it was termed:

4. The *residual* volume, the amount of which is difficult of determination, but has been estimated by different observers at 914 c.c., 1,562 c.c., 1,980 c.c.

Voice — Phonation, the emission of vocal sounds, is accomplished by the vibration of two elastic membranes which cross the lumen of the larynx antero-posteriorly and which are thrown into vibration by a blast of air from the lungs.

Articulate speech is a modification of the vocal sounds or the voice produced by the teeth and the muscles of the lips and tongue.

The larynx, the organ of voice, situated as it is in the forepart of the neck, occupying the space between the hyoid bone and the upper extremity of the trachea, communicates with the cavity of the pharynx above and the cavity of the trachea below. It serves two widely different, though related, purposes, respiration and phonation. It is therefore served by two different groups of nerve fibres, the respiratory and the phonatory. Both sets of nerve fibres are

contained in the trunk of the inferior laryngeal nerve, but have their origin in two separate centers in the medulla. The phonatory center in the medulla is in relation with a volitional or motor center in the lower portion of the pre-central convolution of the cerebrum near the anterior border. Stimulation of this area is invariably followed by bilateral adduction of the vocal bands and closure of the glottis.

The different sounds made by the voice are characterized by three general properties, viz: the *pitch*, which is dependent on the rate of vibration of the vocal chords; the *loudness*, which depends on the force of the vibration, and the *quality* or *timbre*, which is dependent on the resonance of the cavities of the respiratory apparatus, particularly of the mouth, pharynx and nasal cavities.

In different individuals this comprehends one, two or three octaves. In singers, that is, in persons trained in singing, it extends to three or more octaves. But the male and female voices commence and end at different points of the musical scale. The lowest note of the female voice is about an octave higher than the lowest of the male voice; the highest note of the female voice about an octave higher than the highest of the male. The entire scale of the average human voice includes, from the lowest male note to the highest female, about three to three and a half octaves. Some remarkable musical

voices have had a range of three and a half octaves.

Most persons have the power, if at all capable of singing, of modulating their voice through a double series of notes of different character; namely, the notes of the natural voice, or chest notes, and the falsetto notes. The natural voice, which alone has been hitherto considered, is fuller, and excites a distinct sensation of much stronger vibration and resonance than the falsetto voice, which has more of a flute-like character.

The difference in quality of voices, seen when two or more persons sound the same note, is due to differences in resonance in the cavities of the mouth and larynx, also of the nose. The shape of the roof of the mouth, the regularity of the teeth, and the size of the tongue, and the size and clearness of the naso-pharynx are all factors. The size and shape of the larynx and mouth cavity which influence the voice quality can be controlled to some extent during singing, and this is a special point of training in voice culture.

Nerve Centers—The simultaneous and coördinated activity of the inspiratory muscles implies coördinated activity or nerve centers and their related motor nerves—a practically simultaneous discharge of nerve impulses to a great variety of muscles, accurately graduated in intensity in accordance with inspiratory needs.

It has been known for ages in India and for centuries in the Western World that there exists a region of the central nervous system with the destruction of which respiration and life cease. In fact, there are two chief respiratory centers, one located at the fourth ventricle, point "v" in gray matter, principally controlling voluntary respiratory actions, but working reflexly with the second center, located in the medulla oblongata, in close association with the vagi nuclei on either side, and wholly concerned with the automatic or involuntary actions. The action of the medullary center is to send out impulses during inspiration which cause contraction of the inspiratory muscles: (1), of the nostrils and jaws, through facial and inferior divisions of the fifth nerve; (2), of the glottis, chiefly through the interior laryngeal branches of the vagi; (3), of the intercostal and other muscles, which produce raising of the ribs, chiefly through the intercostal nerves; (4), of the diaphragm, through the phrenic nerves. If anyone of these sets of nerves be divided respiratory movements of the corresponding muscles cease. The medullary center itself, however, is bilateral, as has been proven by the method of antero-posterior sectioning of the medulla. The tracts from each half of the center are separate and distinct. If the cervical cord be split into a right and left half and one side sectioned at the level of the second cervical vertebra, then the respiratory movements

of that side of the diaphragm cease while on the opposite side they continue their rhythm. The center not only stimulates inspiration, but aids in completing the cycle of the breath by sending out impulses during expiration to certain other muscles. The vagus fibers associated with the center both stimulate inspiration and inhibit expiration.

The medullary center acts automatically and normally is influenced by afferent impulses from the periphery, but is also influenced by nerve activity from the cerebral cortex, as the cortical center possesses the power within certain limits to override the involuntary respiratory center of the medulla. It has further been noted that though the chief involuntary respiratory center lies in the medulla, impulses to the respiratory muscles may originate in the spinal cord.

The rhythmic activity of the inspiratory center is in part the result of the direct stimulating action of carbon dioxide and partly the result of the transmissions to it of nerve impulses from various regions of the body. The irritability of the center is markedly increased by the percentage of carbon dioxide in the blood and decreased by the opposite condition. Hence the respiratory center is set into action by the condition of its metabolism, much in the same manner as the heart is set to beat rhythmically. Its action is modified by the blood passing through it. When anabolism is completed, catab-

olism or discharge occurs, and this alternate but crude and spasmodic action will occur without a definite blood supply as long as the centers are properly nourished and stimulated by their own intercellular fluid. It is unreasonable to think, however, that the respiratory center is independent of the character of the blood. It has been demonstrated that the presence of the products of great muscular metabolism in the blood will greatly increase the irritability of the respiratory center, even if the blood itself be not particularly venous in character.

The vagus nerves of all afferent nerves are the most influential in maintaining the normal rhythmic discharge of nerve impulses from the inspiratory center as shown by the effects that follow their separation from the center. Thus if while the animal is breathing regularly and quietly both vagi are cut, the respiratory movements become much slower, falling perhaps to one-third their original number per minute. At the same time the inspirations become deeper and somewhat spasmodic in character. The duration of the inspiratory movement is also increased beyond that of the expiratory movement. If now the central end of one of the divided vagi be stimulated with weak induced electric currents, the respiratory movements are again increased in frequency, and their depth diminished until the normal rate is restored. With the cessation of the stimulation the former condition at once returns. This would seem to in-

dicates that the vagus nerve contains nerve-fibers which, under physiological conditions, transmit nerve impulses which inhibit the inspiratory discharge and lead to an expiratory movement sooner than would otherwise be the case, and thus maintain the normal rate and extent of the inspiratory discharge.

Stimulation of the central end of the divided vagus with strong electric currents excites the activity of the inspiratory center to such an extent that the muscles pass into the tetanic state and the thorax comes to rest in the condition of a forced inspiration. These results indicate that the vagus nerve contains two classes of fibers which influence the activity of the inspiratory center, viz., an excitator and inhibitor. The stimulus to their excitation is to be found in the alternate recoil and expansion of the alveoli, in the walls of which they terminate. With the recoil of the alveolar walls nerve impulses are developed which ascend the vagi to the inspiratory center and excite it to activity and thus call forth a new inspiratory movement sooner than it would otherwise take place. With the expansion of the alveoli, nerve impulses are developed which ascend the vagi to the inspiratory center and inhibit its activity and thus lead to an expiratory movement sooner than it would otherwise take place. The respiratory mechanism is apparently self-regulative and maintained by the alternate recoil and expansion of the lungs.

It is important that the reader should clearly understand that the cell is the master of the respiratory processes, not their servant and that the cause of this movement of oxygen step by step from the corpuscle to the plasma, plasma to lymph, and lymph to cell, is the call for oxygen by the cell for its life work, not the presence of oxygen in the blood seeking affinity. The chemical activities within the cell, not the amount of oxygen brought by the blood, primarily determine how much oxygen shall pass to it from the blood.

The breathing movements which renew the air in the lungs and the circulation of the blood, which afford the channel of communication between the lungs and the tissues are accessory mechanisms rendered necessary by the distance of the cells and lymph from the surface of the body. In other words, the mechanical act of breathing though ministering to respiration is not respiration itself.

Breathing movements will be emphasized in the next chapter.

CHAPTER III

BREATHING MOVEMENTS IN GENERAL

AS the blood is constantly giving up carbon dioxide to, and taking oxygen from, the air of the lungs, this air would soon cease to be of use in purifying the blood, were it not for the breathing movements, whose function it is to replace the vitiated air within the lungs with pure air from without.

The breathing movements should be such as to use all portions of the lungs and all muscles intended to be used in the act of respiration. In correct breathing the enlargement of the thorax in inspiration is effected by the approximately equal action of the diaphragm and of the muscles which elevate the ribs. The abdominal muscles should to some extent contract with the diaphragm.

It is generally conceded that there are three typical modes of breathing:

(1) — The upper, or costal,— or clavicular — breathing. Here the diaphragm is but little used. This type is to be found among those people who impede movements of the lower ribs and abdomen with constricting clothing or tight belts. This clavicular breathing elevates the ribs and raises the collar-bone and shoulders, and only the upper part of the chest and lungs—

which is the smallest part—is used. Consequently but a minimum amount of air enters the lungs. The heavy muscles across the shoulders and back of the neck often observed, more commonly in women, is the result of this shoulder-raising type of breathing movements. In addition to this the diaphragm is prevented from expansion, so that a great amount of effort is used without the proper beneficial results that should take place through breathing as it is directly energy wasting. It is probably the worst form of breathing known to mankind, yet it is a common form in the western world, even among those who should know better.

(2)—The intercostal or diaphragmatic type. In this type of breathing the ribs are little used—the diaphragm does most of the work. It involves great relaxation of tone of the abdominal muscles, which is a serious disadvantage, though the principal short-coming is that the chest is only partially expanded. Still it is less objectionable than the first form. Those accustomed to breathing in this manner often consider that because of the movement of the diaphragm and the slight movement of the abdominal muscles—which is only a reflex movement—they are “breathing deeply”. True deep breathing involves not the reflex but the direct action of the abdominal muscles.

(3)—The lateral costal type—abdominal and deep breathing, as it has been called in the west-

ern world. Here the abdominal muscles act at the same time with the ribs and the diaphragm. This form of breathing produces the highest pressure on the contents of the abdominal cavity, and maintains the tone of the abdominal walls without diminishing the efficiency of the oxygenation of the blood. It also forces the use of the upper ribs to a much greater extent than the diaphragmatic-abdominal type.

In a correct form of natural breathing all portions of the lungs should be used. When this is not the case, the result is they are poorly ventilated, their lymph current—which largely depends upon these movements—becomes sluggish, and because of these unfavorable physiological conditions there is a greater liability to disease. More than eighty per cent of lung troubles are found in the upper portion of the lungs—due to the failure to use the upper thorax.

Hence, there is a fourth type of breathing movements which has for many years been a cherished treasure of those scientific men in India who have made a study of respiration. As stated, the enlargement of the thorax in inspiration should be effected by the approximately equal action of the diaphragm and of the muscles which elevate the ribs, and the abdominal muscles should to some extent contract with the diaphragm. This is called the entire breathing type.

It brings into action the entire respiratory

apparatus, every part of the lungs, every air-cell, every respiratory muscle. The entire organism of respiration responds to this form, and the maximum amount of benefit is derived from the minimum expenditure of energy. The diaphragm is under perfect control and is able to perform all its functions properly. This form of breathing is the correct natural type.

A little reflection will show the vital importance of correct breathing. If the blood is not fully purified by the regenerative process of the lungs, it returns to the arteries in an abnormal state, insufficiently purified and imperfectly cleansed of the impurities which it gathered up on its return from all parts of the body. These impurities if returned to the blood are sure to set up diseased states. The blood is driven by the heart into the arteries and thence into the capillaries, thus reaching every part of the body, which it vitalizes, nourishes and strengthens, and returning to the heart and lungs through the veins. The blood starts on its arterial journey bright red and richly laden with life-giving qualities and properties. It returns by the venous route, poor, blue, laden down with the waste matter of the system. This impure stream goes to the right auricle of the heart. When this auricle becomes filled it contracts and forces the stream of blood through an opening into the right ventricle of the heart which in turn sends it on to the lungs where it is distributed by millions of hair-like blood vessels to

the air-cells of the lungs of which we have spoken. This impure stream is now distributed among the tiny air cells in the lungs. A breath of air is inhaled and the oxygen of the air comes in contact with the impure blood through the thin walls of the hair-like blood vessels of the lungs, whose walls are thick enough to hold the blood, but thin enough to admit the oxygen to penetrate them.

When the oxygen comes in contact with the blood a form of combustion takes place, and the blood takes up oxygen and releases carbonic acid gas generated from the waste products and poisonous matter previously spoken of. The blood thus purified and oxygenated is carried back to the heart. Upon reaching the left auricle of the heart it is forced into the left ventricle from whence it begins its journey over. It is estimated that in a single day of twenty-four hours, 35,000 pints of blood traverse the capillaries of the lungs, the blood corpuscles passing in a single file and being exposed to the oxygen of the air on both their surfaces.

When one considers the minute details of the process alluded to, he is lost in wonder and admiration at Nature's infinite care and intelligence. It will also be seen that if one does not breathe in a sufficient quantity of air, the work of the blood cannot go on properly and lowered vitality and imperfect health ensue. The combustion arising from the change in the

waste products generates heat and equalizes the temperature of the body.

Only by deep and correct breathing can the relation of *prana* (*cosmic energy*) with which the air is charged, be established within the body for the fulfilling of its office to the nerve currents or for nerve impulses. This energy (*prana*) is not one of the properties of the air, yet it is present in the air. Many of the western scientists have been aware of this great principle of energy, but being unable to make it register in a satisfactory way on any of their instruments have ignored it. This principle of energy according to oriental science is nothing more or less than the combined currents of the solar and physical energies and the etheric or magnetic energy passing from the south to north. These energies I shall explain more fully in another chapter. Suffice it to say at this point that *prana* or these currents of energy have their own distinct part to play in the manifestations of life, aside from the physiological functions of the tissue. Just as the oxygen in the blood is used up by the wants of the system so the supply of pranic energy taken up by the nervous system is exhausted by every thought, every act, every effort of the will, every motion of a muscle. These processes use up what we call nerve impulse which is a form of this energy. When it is remembered that the greater portion of energy acquired by mankind comes from the air inhaled, the importance of the proper breath-

ing movements will be more readily understood and appreciated.

The act of digestion depends materially upon a certain amount of oxygenation of the food and this can be accomplished only by a certain supply of oxygen taken in through the lungs by proper breathing. Improper or shallow breathing accounts for the weak heart and lungs found so often with poor digestion.

Secondary Effects of the Breathing Movements—The reader or student will now be better able to understand the part taken by the breathing movements in facilitating the return of blood and lymph to the heart. The enlargement of the thorax during inspiration sucks lymph in toward the great veins by the same process that it sucks air into the lungs. Moreover, in the lymphatics situated entirely within the thorax the movements of the lungs during respiration pump the lymph onwards and are of special importance in this respect. What is popularly ascribed to better oxygenation of the blood and tissues is really attributable to the greatly improved lymph flow from all organs which results from deepened respiration. The suction action of inspiration quickens the lymph flow from all organs outside the thorax while the increased pumping action of the respiratory or breathing movements aids the lymph flow from the lungs and other organs within the thorax.

The lining surface of the lungs over which the unbreathed air is spread has been variously estimated as having an area of from 300 to 2,000 square feet, or from fifteen to one hundred times the area of the skin. The amount of air inhaled with each breath is about thirty cubic inches, or three-fourths of a pint. During violent exercise the volume of the breath becomes seven times as great, or two-thirds of a gallon. When the body is at rest the rate of breathing is about eighteen per minute, an intake of about one-third of a cubic foot, which is at the rate of twenty cubic feet an hour, or nearly 500 cubic feet in twenty-four hours. The amount of air actually passed through the lungs does not, however, properly represent the amount of air which is used, for the reason that each outgoing breath pollutes and renders unfit to breathe about 170 times its own volume or three cubic feet of air. So ventilation is required not to replace air which has been consumed, but to remove air which has been polluted.

Breathing through the nose is important not only for the purpose of filtering the air by removing dust and germs, but in cold weather for the purpose of moistening and warming the air before it enters the deeper air passages. The total surface of the nasal cavity has been estimated to be on an average of about fifteen square inches. The mouth surface has an area of less than eleven square inches, or only about two-thirds that of the nose.

Mouth Breathing—There is no more pernicious habit, so far as health is concerned, than breathing through the mouth. Sometimes it is due simply to habit and nothing else. As a habit it may be overcome by an effort of the will. But if, as is often the case, it be due to some diseased condition of the nose or to the presence in the nasal cavities of growths, or to the existence of enlarged tonsils, to correct it special treatment is necessary. As stated previously, the function of the nose in respiration is to warm the air and to filter out from it dust and other extraneous matter which would otherwise enter the air passages and cause irritation. When air is taken in by the mouth these advantages are lost. Professor Raymond states that, "Mouth breathing causes dryness of the mouth and the pharynx, a condition which is very noticeable on awakening from sleep. The mucous membrane becomes congested and inflammation is likely to follow. A chronic inflammatory condition of the larynx may also result from this cause and the evidence is very conclusive that the hearing becomes affected in these cases. The deformity known as pigeon breast is not an uncommon sequel to mouth breathing in children." The consequences of mouth breathing are numerous and serious. Many cases of cold and catarrhal affections can be traced to this same cause, and the subject has never received the attention which its importance demands.

The refining and filtering apparatus of the

nostrils renders the air fit to reach the delicate organs of the throat and lungs. The impurities that are stopped and retained by the straining process and mucous membrane of the nostrils are thrown out again by the expelled breath in exhalation and in case they have accumulated too rapidly or have managed to escape through the filtering process, penetrating restricted regions, nature protects us by producing a sneeze which forcibly ejects the intruders.

In connection with the process of respiration there are certain movements of the glottis which are important. On examination of the interior of the larynx it will be seen that during inspiration the vocal cords separate and during expiration approach each other. During deep breathing the separation of the cords is greater than in shallow breathing. The use of vocal organs is a means of correcting bad habits of breathing.

It is a mistake to think that women and men should breathe differently. The majority of women breathe with the upper parts of their lungs because of tight or ill-fitting clothes when they should fill the entire lung. Men are apt to breathe only by relaxing the diaphragm which is a lazy and improper way and does not fill the tops of the lungs at all. Correct breathing movements are the same for both sexes.

It must not be forgotten also that posture has much to do with securing the best results

from the air we breathe. Slouchy habits of standing and sitting interfere with the proper use of the respiratory apparatus.

The fresh air breathed in by the lungs is not only the "great purifier", but it is a natural disinfectant and antiseptic, and it is not to be compared for a moment with any artificial contrivance. There is plenty of it in the world. It is no paradox to affirm that you tend to purify men's thoughts and feelings when you purify the blood and also the air they breathe. Hence correct breathing and pure air are conducive to good morals. "Cleanliness and self-respect go together." That "Breath is Life" is an old saying but it is a truer and newer one, that if you breathe rightly your life will be longer and freer from disease.

The mystery of sustaining life in our physical body is centered in breath.

CHAPTER IV

RESPIROPATHY—SCOPE AND METHOD

IN every science conceptions which relate to method are inseparable from those which relate to application of the science itself. The method is varied in its application and largely modified by the complexity and special nature of the individual in each case. A general notion of method would be too indefinite for actual scientific use.

The Science of Respiropathy differs entirely from all other so-called breathing exercises or deep and rhythmic breathing fads. The importance of respiration and the extent of chemical changes taking place through breathing have been recognized. Respiropathy is a system of correct breathing exercises known as breathing potencies according to the physiological law of respiration, scientific and intensely practical. The essential act and law of respiration—the oxidative process of the living body, the cause of the movement of oxygen step by step from the corpuscle to the plasma, thence to the lymph and to the cell for its utilization for the life work of the cell, to every cell, tissue, muscle and organ—are recognized and understood.

It is a known fact that unless fresh air or sufficient quantities of oxygen reach the lungs, the venous blood cannot be purified and the

waste products that should have been destroyed remain in the system and create disease, as the blood returns to the arteries in an abnormal state. In Respiropathic Science the cause of disease and ill health is recognized and with scientific, skillful manipulation of breathing exercises the cause is removed and a right relationship and adjustment takes place with definite results. With these facts established and understood the scope of Respiropathy is unlimited. The aid that the study and practice of Respiropathy furnishes is a contribution toward progress which will enable humanity not only to improve the health, but to preserve health and to rejuvenate the body. It deals directly with the facts of the constitution of life, and with the means by which life is built up in the physical organism.

The possible simplicity of animal structure is well shown in the amoeba which is morphologically an animal reduced to its lowest terms. Its physiological operations are correspondingly rudimentary, and by an analysis of them we may discover what is in general essential and fundamental in the physiology of animals and the higher animal, man.

“A survey of the various activities of the amoeba shows that these may all be reduced to a few fundamental physiological properties of the protoplasm, as follows:

“(1)—Contractility, by means of which lo-

comotion is effected. This property, precisely like the contraction of a muscle is the result of a molecular rearrangement, accompanied by chemical changes, which cause a change of form in the mass without altering its bulk, and in like manner the currents which cause the protrusion and withdrawal of pseudopods, and so the locomotion of the animal as a whole, are produced by localized contractions of the peripheral layer of protoplasm which drives onward the more fluid central parts.

“(2)—Irritability (including coördination) or the power to be affected by and to respond to changes or stimuli acting upon or within the protoplasm; the power to be affected and to arouse contractility is irritability. To this property the animal owes its power of performing adaptive actions in response to changes in the environment, and also its power to coördinate the various actions of its own body. The property of irritability lies at the base of all nervous activity in higher forms of life.

“(3) Metabolism, the most fundamental of all vital actions since it lies at the root of all, is the power of waste and repair, the destructive chemical changes in protoplasm (catabolism) whereby energy is set free and the constructive actions (anabolism) through which new protoplasm is built and potential energy stored up. Alimentation, absorption, secretion, digestion and circulation, all of which are only

the prelude to metabolism, and which in the higher animals are assigned to different organs, tissues and cells, in the amoeba are performed by one and the same cell."

One may determine that the substance of the amoeba is receptive and assimilative, that it is respiratory, taking in oxygen and giving off carbon dioxide, and that it is also secretory. Furthermore, if the amoeba be watched long enough it may be seen to undergo division—we say, therefore that it exhibits the power of reproduction. All these properties manifested in close association in the amoeba are exhibited in the bodies of higher organisms in a greater degree of perfection and separation, particular organs being set apart for the performance of various particular functions. So we see that the function principles existed prior to the building of organs through which they now act to produce functional processes.

Respiration may be considered the most important of all the functions of the body, for indeed all the other functions depend upon it. An intelligent control of our breathing power will give increased vitality and powers of resistance to disease. The breathing exercises used in the Science of Respiropathy give exercise to the internal organs and muscles. This method of exercise is priceless as it brings about greater nourishment to the organs and distributes more energy for the appropriation of the nerves.

Prana, or cosmic energy, is found in its freest state in the atmospheric air. In ordinary breathing we absorb and extract a normal supply of prana or energy, but by the use of the breathing potencies in Respiropathy we are enabled to extract a supply greater than normal which is stored away as reserve force in the brain and nerve centers to be used when necessary. All latent faculties are dependent upon this nerve energy for their development. And so not only does the practice of Respiropathy strengthen all parts of the body but the brain itself may receive increased vitality and energy. What we call nerve force is really a form of this energy (what in Sanskrit is called prana). When it is remembered that the greater portion of energy comes from the air inhaled the importance and scope of this Science will be readily understood and appreciated.

Every act, every thought, every movement of the body and its parts, voluntary or involuntary, uses up a certain amount of oxygen and also what we call nerve force. To move a muscle the brain sends out an impulse over the nerves and the muscle contracts, expending oxygen and energy and at the same time producing gases and acids which must be eliminated.

In the demands that modern civilization makes upon the individual the undue expenditure of energy that results in over-fatigue is a frequent occurrence. As a result, a condition is

established in which neither rest, food, nor medicine suffices to help the organism. Gradually a well-defined neurosis or nervous disorder becomes established, often called nervous prostration—among physicians it is known as neurasthenia. The symptoms of such a nervous breakdown are many; intense headaches, pains in the eyes, disturbed vision, backaches, pains in the arms, legs, cough, tender spots along the spine, a feeling of numbness in the limbs, sensitiveness of the face and teeth. There are also apt to be other disturbances of the nerves all over the body causing a prickling or creeping sensation, etc. Respiropathy is valuable in neurasthenia as it aids the circulation, helping to flush the capillaries; the circulation of neurasthenics is feeble. As the oxygenated blood is carried to all parts of the system building up and replenishing so is the energy present in the air carried to all parts of the nervous system adding strength and vitality. The cosmic energy prana is the active principle of what we call vitality.

And it can be truly said that the physical nervous system suffers from improper breathing, inasmuch as the brain, the spinal cord, the nerve centers and the nerves themselves when improperly nourished by means of the blood, become poor and inefficient instruments for generating, storing, and transmitting the nerve currents; and improperly nourished they will

surely become if sufficient oxygen is not taken in through the lungs.

There is another aspect of the case, whereby the nerve currents themselves, or rather the force from which the nerve currents spring becomes lessened from want of correct breathing,—but this belongs to another phase of the subject which will be treated in a later chapter. The practice of Respiropathy in the past and at present is sure in its results as to the cure of nervous disease and muscular disorders. Thousands of cures have been made by it and will continue to be made in the future, as mankind is realizing more and more that sufficient oxygen and energy from fresh air means perfect nutrition, perfect elimination and perfect health.

The combustion arising from the change in the waste products generates heat and tends to bring about a proper equalization of temperature in the body, an essential for curative action in nervous and muscular disorders and fevers—in fact, in nearly all ills of the body.

The plant derives the material framework of its structure from the air by breathing in through its leaves the carbon dioxide present in the atmosphere, decomposing it, fixing the carbon in its roots, stem and branches, and exhaling the oxygen. Mankind exactly reverses the process, inhaling the oxygen of the air, combining it with the carbon of the food and exhaling carbon dioxide. Thus we see that animal and plant life balance each other.

Air is free. Were we obliged to pay for it at so much per pound, as we do our food supplies, we would value it more highly.

The intelligent care of the human body is one of the outstanding features of our time. The more we study the body the more we are amazed at its marvelous adaptability to our uses. For ages men have been studying it, and we are now coming to know more than ever before concerning its nature and capacity.

There is nothing more wonderful in all our modern science than the physiological laws and secrets which modern medical and surgical research have disclosed. Man is learning the scientific use of food, the value of physical rest and exercise and of the laws of hygiene and sanitation; and above all is learning the need of correct breathing and its scientific relation to the vital processes and important functions of the body—to life itself. Physical and moral laws work in harmony; when we keep them so, our bodies are ever kept at their highest levels of purity and health.

The method of Respiropathy is one that makes for the maintenance and restoration of those physical conditions possessed by every normal child at birth, the presence of which insures a proper standard of health, adequate resistance to disease and a reserve power of vital energy. The insurance of such a condition for a generation would mean the regeneration of the human race as constituted today; and I have no hesi-

tation in stating that results secured during the last twelve years in India, Egypt, and in London, in coöperation with leading medical men and in the practical application of the principles of Respiropathy in the United States of America, prove conclusively that this Science will in time be a great factor in successfully checking the physical degeneration of mankind throughout the world and in developing higher standards of health in the individual and the race.

I am so often in receipt of letters asking how one can best apply the method of Respiropathic Science to help himself and others. In the beginning of this chapter I pointed out that the method is varied in its application and largely modified by the complexity and special nature of the individual in each case. The exercises are given personally under direct qualified scientific guidance. The wonderful improvements in physical and mental health and cures wrought are often deemed "miraculous". The precise rules which can be put into practice to cover the various forms of physical and mental troubles have some general principles which embrace the rule of application, however diverse the method may be in practice. Principle itself is of the first importance in the theory and practice of Respiropathy. It may be of interest to my readers to know that I first imparted the method I evolved from the parent science of Respiropathy of my native land—after having

practiced that science for two years and more—to patients recommended to me by medical men some ten years ago. At that time I also introduced it to some leading London medical men who after investigation decided that the method was, as two eminent doctors put it, “a most efficient method,” superior, one physician said, to the parent method.

The method includes, in education: First, Prevention of certain defects and ills of the body; second, correct and adequate use of the respiratory apparatus and muscular mechanism. In treatment: First, Eradication of certain defects and ills of the body and mind; second, coördination in the use of the muscular mechanism concerned with respiration; Third, coördination of the glands and use in the body; i. e., their relation in the chemism of the body to respiration and circulation. The result of this treatment is an adequate performance of the vital functions, normal activity and natural massage of the internal organs so necessary to a proper condition and the preservation of health. Respiropathy as a Science has been classed the greatest benefactor to humanity.

The method of Respiropathy is the specific treatment for respiratory insufficiency and also a prevention of such defects. A brief consideration of the effects of this method: Speaking generally, I have found that the first and immediate effects are a general stimulation and increased efficiency of vitality of the whole or-

ganism; nor is this difficult to understand. With the breaking up of the old motor habits the muscular mechanisms are brought into full play, the toxins which have accumulated are broken up and disturbed, the glands are put to normal action, the blood oxygenated properly, circulation improved and a sense of power and enormously improved efficiency follow as a matter of course. Beyond this, and still speaking generally, I find that there are increased powers of resistance to disease and particularly infectious disease.

It may be well to state again that the method of Respiropathy has none of the mechanical disadvantages of the ordinary "deep breaths", or breathing fads which so often may be rendered harmful in their effects by general, injudicious application or improper use without a knowledge or understanding of the true principles of respiration, or the true principles which apply to atmospheric pressure, the equilibrium of the body, the center of gravity, and to positions of mechanical advantage where the alternate expansions and contractions of the thorax are concerned. Such factors have been recognized in the method of Respiropathy and with scientific knowledge put to practical use with beneficial results.

Since health is dependent upon an abundant supply of life force, upon the unobstructed normal circulation of the vital fluids and upon proper oxygenation and elimination of waste,

anything which promotes them establishes health. Accumulation of foreign matter and poisons in the tissues of the body interferes with the life force, with free circulation of the blood and lymph and with the combustion or oxidation of food materials, such interference lowering the vitality of the whole system. The cells and organs receive their nourishment from the blood and lymph streams. Therefore, these must contain all the elements needed by the organism in correct proportions. It can be truly said that every disease arising in the human organism is from internal causes. The great problem of all schools in their method of treatment is how to restore and maintain the proper state of the blood and tissues and so of the whole organism.

At this point it must not be overlooked that our mental and emotional conditions exert an influence upon the inflow and distribution of vital force, as emotional conditions have a very powerful influence upon the involuntary functions of respiration, as well as upon the nerve force. The influence that mental and emotional conditions have upon health will be fully explained in Part II of this book. Suffice it to say that mind is a vibratory force of energy and helps to produce motion in brain tissues, nerve fibres and even the muscles and glands. Force is the one thing that produces motion. Depressed mental states and emotion inhibit part of this vibratory force which is essential to the per-

petual movements of the currents of the nervous system. The body requires the harmonious vibratory force with the inflow of physical life force to every cell and organ. The more rapid and vigorous this vibratory activity the more healthy the body; this can be accomplished through voluntary respiration. The method of the Science of Respiropathy is the solution for the great problem of how to restore and maintain the proper state of the blood, tissues and the whole organism.

The scope of Respiropathy is therefore unlimited; the method in theory and practice is to consider the cause of diseases. By this method of treatment and by hygienic living, the causes of disease are removed. Most of the so-called "incurable diseases," such as cancer, diabetes, arthritis, Addison's disease, catarrh, asthma, and we may add, spinal curvature, appendicitis and many other diseases may be cured by building up the blood and inducing elimination of systemic poisons. Operative treatment does not remove from the system the cause of inflammation or deterioration of the tissues; it removes only effect, the cause is retained still in the body to weaken other parts or affect the general health of the person.

When waste matter, ptomaines or poisonous alkaloids and acids produced in the body as the result of shallow, improper breathing, wrong diet and other disregard of nature's laws, have brought about corrosion and abnormal growths

in vital parts and organs gradual decay of the tissues is caused and finally chemical changes in the action of the cell. The production of electro-magnetic and vito-chemical energies in the body through correct respiration and the modifications of the breathing exercises of Respiropathy known as breathing potencies is able to correct such ills owing to the chemical action in the cell by the generation of these currents through respiration. It also arouses, strengthens and harmonizes the weakened negative latent currents of energy and enables the arterial blood with its freight of oxygen and nourishing elements to flow more freely into the less obstructed and undecaying tissues. When the organism has been mutilated or poisoned by drugs and surgical operations, then its purification and repair becomes a more difficult task, as there are generally lesions and adhesions to deal with besides the morbid growths which must be corrected before the abnormal formations can be eliminated.

It is well to remember that even in surgical and materia medica treatments it is nature that does most of the work. Then it behooves us to understand and know scientifically the law by which nature is doing her work. If the power in nature which resists destruction is neglected then the change called death occurs to the organism. Since to breathe is to live, then the breathing potencies which sustain the glands and their activities, muscles, blood vigor,

lymph flow, and nerve impulse are the salvation of mankind.

Life, as one scientist has said, is a sort of "spontaneous combustion, a succession of fermentations." In my opinion that defines physical life composing the human organism, which is truly a "succession of fermentations," or chemical changes. But we have also to take into consideration the vital force of life, that force which permeates, heats and animates individual life and the entire universe. The intelligent energy of life can have but one source, the primary force of all forces, coming from the great central source of all life, the Creative Intelligence of Divine Energy, which is the force that whirls in the ether, the electric corpuscles that make up the atoms and elements of matter. If this form of energy were withdrawn, the activities of the physical material elements composing the human organism and the entire material universe would disappear. We shall speak of these more fully in a later chapter.

In the unity of disease and treatment by the Science of Respiropathy the following are recognized in its method: First, the establishment of the normal habits belonging to nature through reason, will and judgment:

- (a) Scientific relaxation.
- (b) Proper rest and sleep.

(c) Good food, proper bathing, right living and thinking.

Second, the correct scientific exercise and extension of the law of breathing known by certain breathing potencies, to bring about:

- (a) Normal tone of the system.
- (b) Prevention of waste of vital force.
- (c) Proper elimination.
- (d) Proper gland activity.
- (e) Special emphasis on the ductless glands.

Third, broken bones should have proper setting by competent surgeons; after proper setting the practice of Respiropathic Science is valuable in helping nature to rebuild new cell and bone tissue.

Biology teaches us that there are three primary requirements of the cell: Innervation, nutrition and drainage. By innervation is meant a copious influx of life force and an adequate nerve supply. Nutrition, the second life requirement of the cell, necessitates normal composition of the blood, lymph and other fluids of the body. Therefore, abnormal composition of the vital fluids constitutes one of the primary manifestations of disease. The third requirement, drainage, demands free and unobstructed venous and lymphatic circulation.

In speaking more fully of the scope of this Science it will be necessary to draw the attention to a few of the so-called "incurable" diseases which have been successfully cured by

Respiropathy. I believe that all diseases are curable, but that some people are incurable owing to their temperament, lack of application to method, undue apprehension without any relation to common sense or fact, and also through waiting until disease has ravished the system beyond repair.

Herbert Spencer spoke truly when he wrote: "Each faculty acquires fitness for its function by performing its function; and if its function is performed for it by a substituting agency, none of the required adjustment of nature takes place, but the nature becomes deformed to fit the artificial arrangements instead of the natural arrangements."

Turning to the point now of the scope of this correct method in disease, let us survey for a moment appendicitis. The prevalence of appendicitis is one of the most striking proofs of the inefficiency of present day methods in regard to health. It is rank carelessness that such bad conditions are permitted to become established as to necessitate the removal of the appendix. The symptoms finally become so aggravated by years of harmful habits of life that a section of the medical profession deem a major operation necessary. It is, of course, well known that the operation is frequently performed when the conditions do not warrant such extreme measures. Fortunately there is now much objection to the removal of the appendix

on scientific grounds, and the trouble can be cured by natural means. Appendicitis, like influenza and all prevalent diseases, without a shadow of a doubt is impossible when the whole system is properly coördinated and the adjustment of the body is correct, and without a doubt can be controlled and cured through the maximum movement of the abdominal viscera in strict accordance with the laws of nature through respiration, obtaining at the same time a maximum functioning of all the internal organs. In this way foreign accumulations are dissipated, constipation is relieved and the more or less collapsed viscera, the cause of all the trouble, are restored to their natural functions. It will be seen then that these things are essential factors in the prevention and cure of appendicitis, and I may add that the application of these principles by the breathing potencies of Respiropathy have resulted in cures in a very large number of cases in which an operation had been medically advised. This again demonstrates conclusively the great scope of this Science and the value of its scientific method to the individual and the race.

It is interesting to inquire why there are comparatively few people who do not in some form or degree suffer from stomach trouble. Stomach trouble, like charity, covers a multitude of sins—sins against the stomach such as dietetic imprudence, overeating, unsuitable or decomposing food, abuse of beverages, and

abuse of breathing. Intestinal digestion cannot take place properly without correct respiration. Stomach trouble as understood by the laity, covers acute and chronic dyspepsia, indigestion, gastritis, chronic gastric catarrh, chronic nervous dyspepsia, ulcer, cancer, etc. The stomach and bowels are the most important organs of the body, but at the same time the most abused. When the stomach fails to digest the food and prepare for assimilation the nutritive portion of it, the whole system must necessarily suffer. When this condition prevails the blood becomes impoverished because of the absence of the atoms or substances which give nourishment to the tissues.

In such cases Respiropathy will prove to be of the greatest remedial importance. Its action upon the stomach excites the little glands along the mucous surfaces of that organ to a healthy secretion of the digestive fluid and in this way the food is made to give up to the body its nutritive elements so that they can be properly digested and assimilated. It also serves the purpose of giving heat and energy to the body and their well known remedial powers have made the Science famous in the treatment of stomach troubles. It is only through the potency of breath that the life essence and the whole organism are attuned perfectly together.

In debilitated states there is no limit to the scope of this Science. It is valuable in lung, heart and kidney troubles because it is a ra-

tional treatment that builds up the system, increasing the quality and quantity of the blood. The benefit of this method and its scope have been fully recognized in the thousands of cures that have been accomplished. The fact is established both by a logical and practical proof. I am not looking too far ahead when I say that Respiriopathy will be the prevalent healing science of the future.

Its scope extends to the prevention and also to a cure for colds. With this consideration alone there is nothing that could prevent it from becoming the most popular science because of its being the most effective. In general colds are the outcome of faulty circulation, imperfect elimination and congestion causing inflammation. The word "cold" is not known to the "science" of medicine, yet colds are probably one of the most prolific causes of death. From a draught or other cause, a portion of the body cools off too rapidly, this results in a partial stoppage of the circulation which perhaps is already faulty. Rapid extravasation (oozing) into the mucous lining of nose and throat takes place, with violent sneezing, a tight feeling in the forehead between the eyes, and if it proceeds, a soreness of the tonsils and throat. As it advances the air cells and finer tubes become filled with oozed-out viscid mucus and nature tries to rid itself of this phlegm by producing cough with expectoration.

Cough "cures" try to stop the cough by

means of opiates, a method very dangerous and injurious to the system. Respiropathy works with nature and not only fills this demand, but helps in getting rid of the phlegm and loosening the cough. And in seeking the fundamental causes, the final results are such that colds are entirely prevented.

If the close relation between man's physical nature and the akasa physical nature surrounding him were better known it would become more comprehensible how the state of the all-penetrating ether, changes in temperature, heat, cold, electric and magnetic conditions come to affect the physical nature of man, acting internally by inducing corresponding changes in his microcosm, even if he is protected against the direct action of the cold, heat, etc.

No enlightened person can fail to see the great necessity for the spreading and advancement of this wonderful Science in practice. It is indisputable that its development and practice have filled a crying need to humanity. All of its scientific principles are now known and applied. This has resulted in the extension of its scope beyond all expectation. There is no need to dwell upon the great improvement in general health through the practice of this Science as there are thousands of testimonials to the fact, and to its great benefit to those suffering from shell shock and other maladies caused by the last war.

The question is often asked by what methods

the Science of Respirography can be taught. Respirography in the realm of the sciences sustains a direct relation to biology, anatomy, physiology, psychology, and philosophy. It is as necessary that the physician should know something of the mind's activities as it is that he know the bodily organs and their functions, their normal and abnormal conditions. Introspection is a valid and valuable method of investigation. The ordinary class room methods employed in instruction in any science are usable by any qualified teacher in teaching the Science of Respirography. The observation method is employed as a positive aid in collecting data and noting points of view in general and making new discoveries. The comparative method is used in connection with the sciences of physiology, anatomy, and psychology.

The scope of the Science of Respirography in every day life will be regarded as so very marked and essential, and its method so practical and scientific, that it will deserve a separate place of positive research.

CHAPTER V

RESPIROPATHIC HYGIENE

LAY THE CORNER STONE OF GOOD HEALTH

RESPIROPATHIC Hygiene consists essentially in the prevention of disease by the removal of its avoidable causes. It has, therefore, for its object the preservation of health and the attainment of more vigorous life.

The increasing recognition of the value of hygiene in general but emphasizes the importance of the science of Respiropathy. Not so many years ago—and even now all too generally—the attitude of the nations toward practical hygiene consisted largely in living in ignorance of the workings of the body, taking little or no care of it or of their manner of breathing. Then whenever any part of the body seemed out of order they would take something simple to attempt to cure themselves. This course was persisted in until they really fell ill. The doctor was then called—he was the one who knew just what drug to give for each disease. He was expected to prescribe and cure the patients; if he failed to satisfy them he was branded as a quack or as not understanding the disease. The attitude of the public was largely that of neglecting personal care of health, meantime believing that

no matter what happened some drug could be swallowed which would set matters right.

Today it is realized as never before that the individual is responsible for the intelligent care of his health and the time is probably coming when he will be held responsible for the care of the body as he is for the care of his morals. A most important aim of practical personal hygiene is the maintenance of the highest working efficiency of the body and mind, upon which good health depends. The present chapter upon Hygiene will be devoted to the practical consideration of breathing, and of knowledge governing the proper use of food, air, bathing, water, exercise and rest, all of which have direct and indubitable relation to Health and Life.

In a previous chapter the importance of respiration has been insisted upon. It is so immediately connected with Life that beyond a certain point of voluntary control the Creator has wisely removed it from our personal management and placed it among the involuntary functions. The act of respiration is that of inspiration and expiration. So breathing is an indispensable condition upon which Life depends directly; it is, therefore, the most important of all the voluntary functions we perform. A healthy respiration demands that pure air be supplied to the lungs at appropriate intervals and in proper quantities. That air is the essence of Life there is no doubt. We can go without drinking water for six days; we can go without

eating for forty days (both of which is very unwise). But we cannot go without breathing for five minutes—four is the limit. Without breath for five minutes one is pronounced dead.

The mighty cosmic energy (prana) contained in the breath of air we breathe is taken at once by the gray matter of the brain and the sympathetic nervous ganglia, while the properties of the air pass on doing their work with the blood for new tissue growth and purification of the whole system.

Imperfect breathing from whatever source it may arise is more to be dreaded as inducing feeble health than almost any other cause, for the reason that it is seldom suspected. The compressed chest and undeveloped lungs indicate a bad habit of breathing. Bad habits in breathing impair the powers of endurance and of resistance both of mind and body.

Individuals vary greatly in their degree of resistance to disease. The degree of resistance to disease is due to four main protective powers of the blood, which is kept in tone by correct and deep breathing. The four protecting agencies are in character, according to Abbott: (1) "Bactericidal, or having the power to kill bacteria; (2), Bacteriolytic, which includes not only the power to kill but to dissolve bacteria; (3), Agglutinating, or possessing the power to produce clumping of bacteria; (4), Phagocytic, or the power of leucocytes (white blood corpuscles) to engulf and digest bacteria."

This resistance to disease is determined by the examination of the blood and is known as the person's opsonic index. Those who understand the chemical mechanism of respiration, or who have read the chapter on respiration of this book can readily see how the blood would have protective powers against disease in free and proper breathing, where the entire respiratory apparatus is used. The respiratory apparatus has an extensive range of sympathies, being affected more or less by every change which takes place in any of the important organs of the body. On the other hand it is able to affect the same organs beneficially for health through breathing exercises, especially so by those given and known under the Science of Respiropathy.

It will be of interest here to state that in the early part of the year 1905 Dr. Atkins of the California Medical College discovered and succeeded in registering by mechanical means a positive and negative electrical current in the air chambers of the lungs of living persons. It is to be seen that western scientists are discovering many truths about breathing which India has had in its keeping since the earliest tradition or ages of man. But the analysis of breath does not stop at this point. It is varied and the facts are of vital importance. They will be dealt with in the chapter on Respiropathy for the Cure and Prevention of Disease.

Upon the rhythmic and harmonic flow of the

Breath of Life and the breathing movements depend the organs of special sense, and the common sense areas of the brain as well as the measure of health and vitality in the human system. Another basic principle and that which comes second to breathing in hygienic value to general health is that connected with proper nutrition, the consideration of food. Through the alimentary and respiratory tracts there are received into the blood not only substances such as proteids, fats, carbohydrates, salts and water which contribute to repair and growth, but also other substances may be set up through food capable of modifying in one way or another the course of events within the body.

Food—Each period of life has its most appropriate food; so has each season of the year and each constitution or body, and that which is proper for one is often quite improper, and sometimes even injurious, to another. The distinction is based upon chemico-vital wants of the system at different periods of life and under varying or varied conditions of the living body.

Professional people, thinkers and students whose expenditure is chiefly of the brain, and whose bodily activity is limited, require such nutriment as will measurably compensate for this waste. Food for laboring people should be adapted to the nature of their labor, that is, should compensate for the expenditure of muscular effort, restore the waste of tissue and sustain the vigor of the body.

Respiropathic Hygiene, however, is by no means a system of diet. Its practices are based upon common sense and the principles and law of the Science of Respiropathy in relation to health. Beyond the prohibition of certain articles of diet which disagree with the individual (not everybody can eat everything), interfere with the bodily functions or impose upon weak, or diseased organs a task to which they are unequal, there is but little need to restrict the patient's food. What is most essential is to draw the line between use and abuse of food. In discussing the subject we have to take into consideration not only the amount of nutrition to be found in the various kinds of food, but the influence in determining their use either in health or in case of illness.

The structure of animal food is identical with that of the human body; hence, the addition of animal food is not required in order to maintain life. The chief constituent of animal food is its nitrogenous material and this element can be more advantageously secured from a vegetarian diet. Undue importance is given by some persons to animal food, as if that alone really nourished the system and supplied what is required for work and recovery of strength. No doubt in some natures it appeases hunger more thoroughly than vegetable diet and satisfies longer because the stomach retains it longer than vegetable food. But the best meat may be rendered unwholesome by decomposition, and

after all it is only dead tissue. In addition meat eating tends to pile up sarcolactic and other acids in the muscle, developing fatigue toxins, the basis for troubles usually diagnosed as neuralgia, rheumatism, arthritis, etc.

It may be well to state here the elements of fat and lean meat. Fat deprived of water consists of three elements, viz: Carbon, oxygen and hydrogen. When the fat is decomposed in the body these elements unite so that the carbon takes a part of the oxygen and becomes carbonic acid, whilst the hydrogen takes another portion of the oxygen and becomes water—any deficiency in the quantity of oxygen for this purpose must be supplied by inspired air. When the person is a shallow or improper breather the supply of oxygen is not there to meet the demand of this process for the sustenance of energy, a cell is broken down, and an indefinite continuance of this procedure may be the cause of cancer. It is a well known fact that cancer is more prevalent among animal food eaters. In lean meat, entirely deprived of fat, besides the combination above described (in reference to fat) there is a fourth element, nitrogen. It unites with the hydrogen in the formation of urea and other compounds which have to be thrown out of the system by means of the kidneys. Meat diet can often be traced as the cause of deranged kidneys; also many skin diseases, for instance, scurvy, the direct cause of which is a lack of vegetable foods. Certain organic

acids and salts found in vegetables are necessary constituents for nutrition.

What do we require food for? For these purposes: To maintain the various tissues of the body while they fulfill their respective vital functions, to produce muscle, and to assist in the generation of heat in order to maintain the constant temperature which the body must always possess in a state of health, and without the environment of which life would cease in the body.

The fuel of the body like that of the steam engine, is hydro-carbonaceous, i. e., it consists of hydrogen and carbon, which readily unite with oxygen. Thus, from these two, carbon and hydrogen, are built up starch, sugar and fat, the hydro-carbonaceous elements of food. The tissues of the body all contain an essential element, known as nitrogen, and nitrogen has this peculiarity—that when combined with carbon and hydrogen it prevents them from as readily combining with oxygen as they would do if nitrogen were absent. It is due to this quality of nitrogen that the tissues of the body, being themselves nitrogenized, are not consumed by the heat of the oxidizing processes going on within them.

There is one broad law governing the foods in a dietary. There should be hydro-carbonaceous material for the working force and heating of the body; a sufficiency of nitrogenized or albuminoid elements is equally requisite for tissue development and repair, producing in

their oxidization a certain amount of heat. Albumen, a complex substance chemically, contains carbon, hydrogen, some oxygen, its essential nitrogen, with a little sulphur, and is largely found in the vegetable world. All seeds contain it; the white of eggs is very pure albumen. It is also found in fish and in casein in milk and cheese.

Besides this, there are the mineral elements of food; phosphorus foods for the nervous system and growth of bone, iron for the haemoglobin in the blood, sulphates and other salts of sodium, potassium and magnesium, alkalies for the liver, are requisite in limited quantities. Chloride of sodium (common salt) is the most important and deprived of it there is loss of weight of the body. If the liver does its work well, all goes well. But if the albuminoids are not sufficiently oxidized, then the blood becomes surcharged with bile salts, and biliousness, gout, etc., results. Through the Science of Respiratory in breathing potencies the liver can be made to work properly and improper oxidization corrected. Physiological law assures us that the tissues of the body do not require the amount of albuminoid matter to meet its daily wear and tear that is usually consumed by most people. The real need is very small. The essential need with most people is to breathe better that sufficient oxygen may be present for proper combustion of the food elements. A proper dietary should contain all the food ele-

ments essential to the development and maintenance of the body.

It will not be out of place to mention here the desirability of including in the diet the various fruits for the sake of their essential acids, particularly the citric fruits for the alkaline reaction of the citric acid in the system.

In addition to the foregoing we must not overlook spices and condiments which, aside from being agreeable to the palate, serve to excite and sustain the appetite and prevent too much disengagement of gas in the alimentary canal during the process of digestion and assimilation. They also have a cooling effect on the blood.

In connection with the composition of food (according to Kimber) in a general way it may be said that the "carbohydrates are used for the production of force, and that the fats are stored in the body and used as fuel. The proteids do all that can be done by the fats and carbohydrates, and in addition form the basis of blood, muscle and all the connective tissues. The carbohydrates include the starches, sugars and cellulose, being found most plentifully in the cereals, such as wheat, oats, rye, barley, corn, in the legumes, as peas and beans, and in the various root foods, as potatoes. The carbohydrates lessen the desire for fats, and taken in excess cause a great increase of fatty tissue in the body and produce indigestion."

The reserve forces of the body which are

obtained from food are stored in the form of glycogen and fatty tissue which is given out for heat and energy during the intervals between meals. The potential energy of any food is measured by the amount of heat which can be obtained by its complete combustion, and is expressed in units or calories. The direct cause of such combustion or oxidation is centered in respiration.

In the methods of preparing food — the cooking of food subserves several important purposes and demands more intelligent consideration than is usually given to it. Cooking removes some things that might prove injurious, destroying any parasitic germs that may exist. It also renders food more digestible by the stomach, more easily masticated, dissolved and assimilated. It is a known fact that the use of raw meats and vegetables is a very dangerous thing for the body, producing in many instances parasites and tapeworms in the system.

The only vegetables that should be eaten raw and in that way may have better food value are tomatoes, celery, lettuce, radishes and carrots. Fadists and food extremists have been the cause of most stomach troubles prevalent today. Long and continued fasting is another evil. A fast should never exceed forty-eight hours. Man should exercise his birthright at all times, which is reason and judgment, and to prove his unfailing judgment, put more air in his lungs and fewer mixtures of foods into his stomach.

In other words, the inspired air is important for digestion and moderation in quantity and quality of food is one great factor in preserving health.

Water as a Drink—Undue emphasis has been laid upon the danger of drinking water with meals—the reason usually given being that the water takes the place of a normal secretion of saliva. This is questionable. As a matter of fact, the water thus taken in is soon discharged into the intestines and absorbed. The difficulty is that too much fluid with the meal is apt to lead to insufficient mastication, because the food is made easier to swallow.

Water enters into the composition of the tissues of the body, forms a necessary part of its structure, and performs such important functions in the animal economy as to be absolutely indispensable for life and health. It gives fluidity to the blood, holding in solution the red globules, fibrin, albumen, and other substances which enter into the different structures of the body. A human body contains about 75 per cent. water.

The purpose of water is dual; it imparts vitality by its chemical power and removes from the blood such poisonous kinds of matter as perspiration and urine.

Many people drink too little water. The correct amount for an adult is three pints per day. Water is constantly being lost through the

lungs, skin and kidneys, and this loss is only partially made good by the oxidation of the hydrogen of the proteids and fats. The abstraction of undue amounts of water by perspiration may seriously interfere with the secretion of the gastric juices, and a deficiency in the supply of water to the blood similarly interferes with the secretion of the other digestive juices and so by impairing intestinal digestion favors constipation.

Pure water — which is never found outside the laboratory—is colorless, odorless and tasteless, of neutral reaction, and composed of 11.11 parts of hydrogen (the negative pole), and 88.89 parts of oxygen (the positive pole), the chemical formula being H_2O .

Ordinary water contains a great variety of substances, both mineral and organic, which it derives from the air and soil.

Impurities in water are those substances which directly or indirectly may be injurious to health. That the water of running streams, lakes, etc., is largely self-purifying, has been long recognized. This self-purification occurs by sedimentation and by oxidation, as in its movement the water comes in contact with oxygen which oxidizes the organic matter.

If water is bad, either from containing organic matter or from being too “hard,” that used for drinking should first be boiled and then filtered or strained. Boiling removes most of the salts which cause hardness and which crust

in kettles, leaving the water softer. After standing a day it should be poured from vessel to vessel several times to get back the air expelled by heat (for water needs air to vivify it). This process also makes it more palatable. Boiling destroys some of the organic matter, and the disease germs which are generally present, as all water partakes of the soil through which it flows.

Air, Ventilation—A proper amount of pure, fresh air is essential to the preservation, as well as to the enjoyment, of life and health. By breathing impure air the vital energies are thereby slowly but surely impaired, especially in the case of growing children and persons suffering from disease. The question of pure air is the more difficult to solve because many of the most objectionable impurities give to our senses no evidence of their presence.

“The atmosphere consists of 79 parts of nitrogen and 21 parts of oxygen. These are not chemically combined, but in a state of intimate mixture; or more properly, the nitrogen acts as a solvent and the oxygen is held in solution in it. This accounts for its uniformity in every place where it has been examined. Besides these two gases, the atmosphere holds a variable quantity of watery vapor, carbonic acid, ammonia and other volatile substances, which it receives from many sources, such as burning of

fires, breathing of animals, decomposition of vegetable and animal matter, etc.'—(Brown.)

One of the most beautiful economies in nature is that by which the air is purified of the pollutions that are constantly poured into it. These noxious impurities are readily dissolved in water and the showers as they fall from the clouds wash and purify the air. The growing vegetation assists in the process of purification, inasmuch as it gives off oxygen and takes on carbonic acid gas.

It has been ascertained by careful experimentation that air exhaled from healthy lungs has lost about one-fourth of the oxygen it originally contained and that the volume has been maintained by the substitution of carbonic acid gas for the oxygen abstracted. Air that has lost one-fourth of its oxygen by a first inhalation will lose less than one-eighth the second time that it is inhaled, and when it has been diminished one-half the original quantity it will no longer support life. Hence, we see the need of proper ventilation of rooms for the well-being of health and comfort. There must be a constant removal of the air which has been vitiated by breathing. It is not necessary that air should be cold in order to be pure. Air must be allowed to circulate. If not, it becomes stagnant and impure.

Air, like water, is dual in action, but single in purpose. The purpose is to refresh and develop sensations of stimulation and vitalization.

In action it may be pure or impure. Its main action is in purpose mentioned above, but if impure and stagnant, despondency and exhaustion follow. Odors and fumes in ill-ventilated rooms from a heating apparatus are dangerous because the oxygen, the vitalizing substance of cell walls of the body and brain, is withdrawn from the lymph and blood corpuscles. Pure air is necessary to pure blood, nervous energy and perfect life. Lazy habits of breathing for obtaining this air mean lung starvation and starvation of all the cells of the body that is building up the whole system of being.

It is appalling when we think of the scarcity of air in homes, in school rooms and places of public meeting. It is not to be wondered at that many people come back from such places exhausted, as many people through incorrect breathing have a lack of conservative oxygen.

Only gross ignorance and carelessness of the prime necessities of healthful living have created and fostered most of the ills and suffering of humanity. Many people have dragged through life in the belief that ills of the body and brain were natural and unavoidable, and this thought still blinds the majority of mankind. They go on neglecting that which prevents disease—healthful living. The purer the air inhaled the purer the life, as life exists only from breath to breath, and those who only half

breathe, only half live. Breath is everything. In the final analysis, Breath is all there is.

Ventilation in sleeping rooms is one of the most important requirements of life, both in health and disease. Without it sleep is heavy and unrefreshing. The currents of air should be prevented from playing or blowing on the face of the occupant of the bed when asleep, as this is detrimental to the trophic influence of the fifth or trigeminal nerve and is liable to set up inflammatory processes which are harmful for the throat, ears, eyes, and teeth. This can be prevented by a curtain or any sort of shield. Not only is ventilation essential, but the manner of breathing in the air is of the greatest importance.

Every day and moment the power of Breath and its internal capacity is busy refining material for the manufacture of the various parts of our body—whether it be bone-cell, muscle-cell, blood-cell, nerve-cell or brain-cell. The most wonderful part is that it is all accomplished by the air we breathe.

Bathing—Baths have an essential role in the prevention of disease. In order to maintain a uniform temperature of the body the skin must be kept in a healthy condition, so that when the heat of the body rises above ninety-eight degrees, perspiration will be increased and evaporation will reduce the temperature to the healthy standard. On the other hand, if the

heat of the body falls below that standard the action of the skin will be proportionately diminished, and in order that the skin may thus act as a regulator of heat it must be kept clean. It is also one of the channels through which the waste material of the body is carried. Further, a clean, wholesome body not only stimulates physical vigor, but produces mental activity as well.

Bathing may be used for other purposes than simply that of cleansing the skin. Where the cutaneous circulation is feeble and the temperature of the surface too low, a hot bath may be taken for the purpose of inviting the circulation to the surface. If the vital force be not too feeble the circulation may be attracted to the surface more permanently by the reaction which follows a cold bath, than by the direct application of heat. To secure this result the bathroom should have a temperature of about seventy degrees and the bath should not be continued for more than two minutes, and should be followed by deep respirations and brisk friction on the surface with a rough towel. The room should, of course, have the proper ventilation.

It is an error to insist upon a daily bath for all persons. But few have such an amount of vitality as to be able to endure the shock of a daily cold bath without detriment to health. Most persons will find it better to discriminate in the use of the bath. A daily bath to persons in health, especially in warm weather, is very

desirable. But for most persons a bath three times a week is better and meets the demands of the system in keeping the pores of the skin open and the capillary system in proper working condition. The shower bath is excellent for those of good health, or persons with merely torpid sensibilities of the body, but it is extremely bad for an exhausted vitality.

Cold bathing should not be practiced when the body is cold or cooling, or exhausted by exertion or fatigue, or if the system is weak from organic disease or when the skin feels chilly. Neither a cold nor a hot bath should be taken soon after a meal—not for at least an hour and a half afterwards. Taking a bath too soon after eating a heavy meal has been known to cause palsy, white swelling and even paralysis. Cold bathing on rising in the morning for a long period of time results in constipation, although the bath itself may be enjoyable.

No one is justified in recommending a special bath as an essential element in the hygienic conduct of life. Each person must determine for himself the value of the bath by the sum total of its after effects and not alone by those which accompany it. The time for bathing may also depend upon one's work in life. We do not live to bathe any more than we live just to eat, but we do breathe to live and to live is to breathe, and in living we both eat and bathe to help sustain life.

The indifferent bath—one which is neither

distinctly hot nor cold—may be considered the best provided it is not taken in a cold room, as it is free from special physiological effects. The skin consists of two layers, the epidermis and the dermis. Its functions are many: To serve as an organ of excretion, absorption, protection, sensation, and as previously mentioned, as a temperature regulator. Its great power of absorption and excretion may be called its respiration, and its exhalation or throwing off of bodily vapors is more successfully accomplished through the indifferent bath and correct breathing movements. Bathing is one of the means of helping to control the energies and natural ventilation of the body.

Rest—Rest is the law of life everywhere. Rest and activity compose the rhythm of all nature, and the intervals of repose are as essential to the health of the human body as are its periods of activity. Rest is rendered necessary from two considerations: In the first place, the cells composing the muscular fibers are broken down and removed more rapidly during the active contraction of the muscle than the nutritive process is able to replace them; but during muscular rest the preponderance is on the other side—the wastes are replenished and the muscular tissue restored to its original integrity.

In the second consideration, active exercise expends force more rapidly than it can be supplied by the brain and nerves; hence, as fatigue comes on the muscles contract more slowly and

with less energy until finally there is an exhaustion of strength above what is necessary to keep functioning the involuntary organs and motion ceases from prostration of the voluntary powers.

Looking to the accomplishment of these objects correspondingly rest must be of two kinds. First, a mere suspension of muscular contraction is all that is necessary to restore the wasted tissues, for nutrition will go on with an activity stimulated by the demand for new matter, while the waste from action will be suspended. Under these influences but a short period of repose will be required to restore muscular equilibrium. A reclining position is better adapted to rest than either sitting or standing, since that rest is most perfect which most completely suspends muscular action.

But to restore exhausted contractile force, requires more than muscular repose; it demands the brain rest and recuperation which is obtained through sleep, but which can also be brought about by stimulation and increased induction, through correct breathing exercises, of nerve force, a form of energy resembling in many ways electricity. This force or energy is essential to the development and maintenance of the highest powers, the governing and controlling faculties of the brain.

The brain is in charge of the nervous system and controls all the arrangements for supplying it with food, with the essence of fresh air and

all things necessary for its physical upkeep. It is the headquarters of the forces and energies of the system. The brain is dependent on the uninterrupted and efficient action of the respiratory organs for a supply of oxygen necessary to carry forward the chemical changes so intimately connected with the evolution of the vital force. Without the chemical changes dependent on digestion and respiration the supply of vital force is cut off; without a healthy action of the brain and nerves its distribution is impossible.

To keep well is to maintain and preserve the integrity of the nervous system. As with muscular rest, so with brain rest in sleep, the normal equilibrium is soon regained and reserve supplies stored up. The great controlling and directing center of intellectual, nervous and physical activities, the brain, demands hygienic care to prevent the wasting of nerve energy. It demands cessation of its labors and rest for recreation and repair.

When the healthy nerve is rested, as in the morning after a good night's sleep, the cell body under the microscope is found filled with large numbers of small sand-like granules (Nissl's granules). These granules are believed to represent the energy accumulated during rest and sleep. As the nerve begins its day's work and as the day proceeds, these granules gradually disappear, until when night comes, and the body is fatigued, these granules have entirely disappeared from the nerve cell.

Sleep is also a means by which the fatigued and depleted brain-cells have an opportunity of completely ridding themselves of fatigue poison and of accumulating a fresh supply of nerve energy with which to carry on the motor power of the body the next day. The motor or efferent nerves are responsible for their part in the expression of nerve control. Consequently, many functional affections of the brain and nerve centers are manifested in muscular abnormalities such as shakiness, twitchings, spasmodic movement, temporary loss of power, etc., the outcome of too much work, or monotony, and not sufficient brain rest or relaxation of the body. The romance of the "midnight lamp" has been a depressing and expensive luxury, dimming many of the brightest stars of human genius.

It may be well to state here regarding the activity of the brain and its appendages that while subject to the general physiological law of alternate activity and rest which is intimately connected with the normal condition and healthy action of all the organs of the body, the growth and development of the brain are governed by another law than that ordinarily governing the growth of other parts of the body common to humanity. Its development almost entirely depends upon the proper use of its faculties and it is more harmful to the brain not to use its powers than to overuse them, since the involuntary nerve movements are in sympathy with rest, slowing up during sleep, and non-use of

the brain twenty-four hours a day instead of only during sleep tends in time to lower the vital power of the entire system, and the mental powers suffer severely accordingly. It is part of our normal life to do mental work. Mental work in itself, or the concentration of attention which mental work requires, does not lead to any bad results, though many people believe and will say that they must give up mental work and take up physical work. The real trouble is misdirected nervous activity. It is overwork and not mental work. It is the use of the brain too long without rest. Many break down with nervous prostration because of an excessive devotion to business, or science, or art, or even sheer idleness will bring about the same result. The muscular system has been neglected and not only that but you will find incorrect and shallow breathing accompanying such conditions and hence the proper metabolism of the system has failed to minister to the rest of the body. Overworked brain cells and nerves obey the same laws of disease as do overworked muscle-fibers. All periods of confirmed want of sleep, besides diminishing the output of nerve energy, tend towards exhaustion of the vitality of the nerve elements, and ultimately toward their injury. A brain deprived of its due amount of sleep, from whatever cause, is on the downward grade towards disturbance of function, nervous exhaustion and physical injury.

Rest and recreation are indispensable for

every human being; they tend to improve the general health and without them nervous instability soon undermines the vigor of the body and brain.

Everyone seems in a manner a law unto himself in regard to the amount of sleep necessary to maintain good health. It has long been conceded that adult persons between the ages of 20 and 50 years require on an average of eight hours sleep out of the twenty-four. Children and all under the age of twenty require more hours of sleep, as do also those over 50 years of age. It is an essential to be remembered that sleep concerned in the physical upkeep and repair is that obtained before midnight, and the sleep of the following hours is considered the mental sleep, for the upkeep of the brain, the mental powers. Different people undoubtedly require different amounts of sleep, perhaps due to the relaxation involved in sleep.

Under rest it is necessary to consider relaxation as well as sleep as a factor in the promotion of health. "The ability to relax is something which like all phenomena of nervous life depends on practice." (Hough & Sedgwick). The habit of momentary relaxation in the midst of the day's work is a valuable aid to better conditions at the time, but especially valuable in retaining the power to relax. Periods of too long relaxation, like sleeping too long at night and in the morning, or too much through the habit of taking constant naps, diminish irrita-

bility of the nerve cells making concentration of attention a very difficult matter. The correct path in this, as in all other matters of personal hygiene, is that between extremes. With many people the inability to sleep is generally due to a lack of the conservation of the power to relax.

Occasionally psychical processes exert a profound influence upon the brain and spinal cord. It is a matter of common experience that the emotions, a heavy heart, a clouded conscience, anxiety, and unhappiness, cause loss of sleep and exert a physiological influence to wakefulness.

Sleep also has much to do with the way that we breathe. Correct breathing plays a very important part in the ability to sleep and relax. The manner in which one sleeps is also of great importance. The body should be straight and not coiled up or half doubled; such postures interfere with the circulation and cause disturbed sleep. The right side is generally the most comfortable to lie on, the liver being then supported, while the beat of the heart is less likely to prove disturbing. Persons of an electrical, positive nature should sleep with the head to the north; in this manner the magnetic influence upon the circulation and nervous system will be evident and beneficial. The magnetic currents of the earth pass horizontally from the south to the north. Persons of negative and too magnetic nature should sleep with the head to the west in order to receive the posi-

tive solar electrical universal currents passing from east to west. The positive and negative fluids of the plexuses are essential to the equilibrium of the brain and of the whole system. They regenerate even the life of the cell, and their proper relation is the necessary condition of poise of all the functional processes and for revitalizing sleep.

Exercise—Exercise is essential to health—some kind of muscular exercise is a hygienic necessity for every period of life. The proper periods for exercise are when the system is not depressed by fasting or fatigue, or oppressed by the process of digestion. Moderate exercise, properly taken, strengthens and invigorates every function of the body.

Muscular exercise is an agent which increases the depth and frequency of the respiratory movements. The hygienic importance of this does not lie in the better oxidation of wastes through increased respiration, but because of the secondary effects of the respiratory movements in promoting the flow of blood and especially the flow of the lymph. The improved lymphatic environment of every cell resulting from increased breathing movements and from the pumping action of the mechanical motion, the relief of internal congestions and the favorable influence upon digestive functions—all these things are necessary to healthy cell life.

It is one essential for the maintenance of

health that the body shall be exercised in all its parts. Rational physical exercise develops not only the muscles but affects all the organs of the body; the heart, lungs, skin, kidneys, brain and digestive apparatus are stimulated. The body and its various organs and parts need sufficient exercise daily, just as they require a sufficient amount of air and food.

“Excessive exercise tends to weaken the heart, and is a common cause of morbid excitability manifested by irritability of temper, sensitiveness, and that form of nervous unrest known as ‘fidgets.’ ” (Harrington.)

The system of muscles with their tendons and attachments constitute the machinery of motion, which is operated by the vital force through the motor nerves. A general law governing all the vital machinery provides that within certain limits an organ shall correspond with the work it is required to do. Under this law the muscles increase both in size and force by their judicious use, and the supply of vital energy is correspondingly augmented. When the muscles are brought into use there is an increased flow of blood to them, which demands a corresponding increase in the action of the whole circulatory apparatus; but the augmented circulation throws more blood to the lungs to be purified and aerated and this requires fuller and deeper breathing. A large flow of oxidized blood being transmitted through the capillaries, the chemical changes both in the tissues themselves and

in the combustible elements of the food, are directly increased.

This complicated chain of causes and effects springing from muscular contraction, terminates in two important results; first, the cell structure of the muscles themselves is more frequently renewed; by this means the contraction of the muscle is rendered more efficient, and if the demand is kept up by habitual activity, the number of cells will be increased, thus giving greater volume and density to the muscles that are in frequent use. In the second place, the chemical changes connected with the renewing of tissues—the removal of waste matter, and depositing of the new, as well as the rapid oxidation of the carbon and hydrogen of the food—are directly connected with the evolution of vital force. This not only serves to increase the power of muscular contraction, but it reinforces all the vital functions and when accompanied by deep breathing, imparts activity to the mind.

This activity of the muscular system terminating in an increased waste of material, with a correspondingly augmented force distributed to all the organs, calls for a supply of new material to be furnished by the digestive apparatus, which is only a natural means of creating an appetite, for it not only demands the food but at the same time supplies force for its speedy digestion through the deeper breathing movements.

Physical culture exercises—dumb-bells, In-

dian clubs, bar and trapeze work, without proper breathing or rhythmic breathing at the time of exercise is very stupid and harmful. They are in violation of the laws, especially the physiological laws, of the body. Such exercises taken improperly, or too violently, are exhausting and sometimes prostrating in their effects. One should never take exercise without a steady flow of breath on account of the chemical changes taking place in the tissue of muscle and glands. It is well known that the most celebrated athletes die very young, and according to statistics compiled by Professor James of Harvard more than half of the college athletes die before they reach the age of forty. Thus, much physical exercise without proper breathing is of more injury than gain owing to the increased metabolism taking place in the tissue and muscle at the time. Exercise should be a corrective of the habit of improper and shallow breathing.

Exercise whether in the form of manual labor or taken expressly for its hygienic effect should be reduced to a habit, and should have its regular periods of activity and rest. The amount of exercise necessary to secure its best result is modified by so many circumstances that no special rules can be given. The general law governing exercise is that it is beneficial up to the point of fatigue, but as soon as this feeling is distinctly perceived exercise should be suspended at once. The value of exercise lies not in over-developed muscles, but in a body healthy

in all its parts with its vital force conserved and a full complement of reserve vitality. Various forms of gymnastics and calisthenics, while they fill most of the requirements in the rules for correct muscular exercise, fail to furnish much mental stimulus. Games if not too violent are the best form of exercise as they involve not only muscular but mental activity. All movements in exercise should be energetic and active but never violent, as violent exercise more than defeats its object.

When the foremost medical men of Paris were mourning the great loss to their profession of Dr. Charcot, he stated on his death-bed, "I leave behind me four great physicians, the air we breathe, water, diet, and exercise."

Everyone can daily in five minutes in his or her room exercise every muscle of the body. With room well ventilated, stand erect, unencumbered by restricting clothing, breathing deeply, and make the motions of rapid walking without advancing, at the same time extending the arms in a swinging movement forward and sideward at the level of the shoulders, and expanding the chest, then letting down arms as exhalation takes place. This exercise should be taken as rhythmically as possible, and will bring into action nearly all the voluntary muscles of the body.

Youth just turning into manhood and womanhood should regard this exercise and develop every muscle of the body every day, conforming

in other respects to hygienic laws previously described. Nature will do for them all else that is necessary to develop perfect forms and perfect health.

CHAPTER VI

RESPIROPATHY IN CURE AND PREVENTION OF DISEASE ITS RELATION TO MATERIA MEDICA

ENOUGH perhaps has already been said to prove that the Science of Respiropathy is one necessarily demanding the attention of all who have to do with the treatment of disease and its prevention. Its practices have been extended to many thousands of people in correction of their bad habits in breathing, thereby preventing many ills to the body due to improper respiration. It now invites people to become its champion in the prevention and cure of disease. It secures for the people a greater degree of safety, comfort and longevity than has been obtained by any of the nature healing sciences.

In nothing is this more evident than in the greater care with which the medical profession now inculcate and encourage among their patients the idea of the benefits derived from deep breathing and filling the lungs with air. A system of correct breathing such as the Science of Respiropathy which recognizes all the physiological and psycho-physiological laws of respiration, the wants of the human organism and the requirements of its tissues emphasizes its importance through scientific modifications of breath. That the attention now paid to breath-

ing is not a mere passing fad or fancy is evidenced by the fact that it is more and more engaging the scientific attention of the most eminent minds.

It may not be amiss to offer in this place a few of the essential necessities of just the ordinary respiration to promote health and prevent disease. First, the purification of the blood depends upon the breathing—the oxygen inhaled into the lungs. The circulation is an essential part of the respiratory mechanism. The two important events in tissue respiration are the heart-beat and deepened breathing movements. Then to breathe is to live and is essential to the maintenance of health, the interexchange of gases between the blood and tissues. When breathing is not properly performed and incorrect habits of breathing become established the fluids of the system are disturbed and may set up all sorts of diseases both of body and mind. All the fluids of the body except the blood are too often overlooked by the *Materia Medica* profession,—perhaps for the reason that the blood is the only fluid in the body that can be treated by medicine. Hence, many diseases have been considered incurable for the very reason that the cause was either unknown or overlooked. The fluids which are very often overlooked are the lymph, chyle, saliva, gastric juice, pancreatic juices, bile, mucus, etc., which as I have said elsewhere may not only cause bodily disease but mental disorders as well. Again, cor-

rect breathing stimulates the appetite, assists digestion by promoting the flow of secretions and the movements of the alimentary canal and counteracts the action of injurious ingredients of food. There would be no intestinal digestion without the breathing.

The fluid of the body known as lymph is dependent upon the respiration for its normal flow. The suction action of inspiration quickens the lymph flow from all organs outside the thorax, and the increased pumping action of the respiratory movements aids the lymph flow from the lungs and other organs within the thorax. Waste products are more completely removed from the lymph spaces surrounding all cells and thus one of the most important fatigue conditions is relieved. When the waste products are not removed from the lymph spaces surrounding the cells fatigue toxins may set in causing fevers or generating poisons which disintegrate the cells. The primary cause of fevers is internal, a condition in the body, while the secondary cause may be external.

The normal temperature of the body is obtained through respiration (breathing) and cleanliness. It is a noted fact that the pulse is usually increased by about eight beats per minute for every degree of temperature over the normal of 98.6° F. Thus if the pulse is 72 at the normal temperature, at one degree above normal temperature, which would be 99.6° F., the pulse would be 80, etc. The point to be

noted is the value that the medical profession places upon the frequency and fullness with which respiration is performed.

The relation between Respiropathy and *Materia Medica* is not that between two classes of facts, but between two aspects of the same facts. In other words, it is the constant relation between the science and the art. The ground of preference to Respiropathy is its superior adaptation to the needs of the human body; the fact that it is merely an expansion of the science of the laws of healing by nature according to physiological laws without the use of drugs and medicine. It is a science in which the factors and forces that govern health and those which are the cause of disease are studied and understood and furnishes not only a theory but a practical application through breathing exercises to improve and preserve health and cure such diseases as are the outcome of defective respiration.

Respiropathy, as I have said in a previous chapter, goes directly to the facts of the constitution of life and to the means by which life is built up in the physical organism. The philosophical principle of the Science of Respiropathy is that it deals with natural laws of the body, with its chemism, and with its energies, static, dynamic and potential.

In speaking of the chemism of the system it is necessary to draw attention to the mineral compounds which are not only necessary to the

function of the body but to its structure as well. Man, the highest development of life, becomes a microcosm, having in the body certainly all the more common and probably every primary element of existence. Thus, we have carbon, nitrogen, oxygen, hydrogen, sulphur and iron, phosphorus, lime, chlorine, fluorine, silicon, mercury, etc., in a more or less perfected condition in the human body. The bones are mostly phosphate and carbonate of lime. Sulphur prevails largely in the skin, hair and nails; phosphorus in the bones and brain; silica forms the enamel of the teeth and the white of the eye, and through all the wonderful structure of the body each element plays its essential part, and not only sustains that part, but serves to maintain the integrity of the whole.

It is not to be supposed that these chemical elements exist within us in their crude forms. As they exist in the body they are refined far beyond their elementary particles found elsewhere. It is impossible to refine these gross materials as they are found in the universe equal to the requirements of the human body for medicines. Though they are triturated, refined, attenuated, so as at least to approximate the condition in which they are found in the human body, still at best they are health disturbing agents owing to the process through which they have had to pass. *Materia Medica* recognizes these chemicals and administers them medically. My point is that the curative properties are gone by the

time they have been sufficiently refined to be used in the human body and therefore they become poisons or health disturbing agents, instead of life sustainers preventing and curing diseases. The need of the human body in disease is not merely for something to act in a certain direction or upon just some certain effect in an organ or tissue, but to go to the cause of disease and act at the same time upon the fundamentally different elements and tissues which constitute the whole function principle that each may perform its own office and conduce to a general result. Vegetable poisons, animal poisons, chemicals, minerals, as classes each act differently upon the human system, generally producing disturbances of function first, affecting the fluids of the body and at once causing changes in the tissues.

When it is realized that all these must be changed, renovated or even renewed, each within itself, and sustained by appropriate nutrition, it will be seen that health cannot be acquired by drugs, only relief afforded, as most of the *Materia Medica* profession are acknowledging today. In many instances the medicinal influence is soon extinguished or lost so that repeated and larger doses are required for relief. In some cases the general chemical condition of the patient is such as to have a modifying effect upon the medicine and relief and cure seem to take place at once. *Materia Medica* has its place in the economy of things and has shown that the

human body needs intelligent care. We are now coming to know more and more concerning its nature and capacity. The wonderful secrets which modern medical and surgical research have disclosed are worthy of attention, but it still remains to be discovered how medicines can be used so as to restore without the possibility of injuring—to get only the curative powers of medicine.

In substituting a similar or opposite medicinal action for a morbid one, the aim is to extinguish disease. In some cases this may be easy, in others difficult, or again impossible, as every art has its limits, but it also has its use. Why should it be essential to use drugs and medicines for most diseases, when all the elements are present in the body and can be put to their use and function through proper breathing potencies? There are some diseases that cannot be cured by medicine, and perhaps others that can only be cured by substitution.

It is not my purpose to discard or discredit the knowledge and achievements of the *Materia Medica* profession, but solely to draw attention to the curative means and measures within the human body. We may apply them with definite results according to the principles of Respiropathy.

The mineral compounds are present in the organism, and it is impossible for them to be entirely destroyed or to leave the organism. Then what becomes of them, why are they not

doing their respective work and office to the body? We must look to the fluids and the immaterial energy—the cause is functional. It is generally agreed that the structure and vitality of the organs depend upon the presence of the necessary quantities of these organic constituents. Disease is caused by a loss or deficiency, or by an excess of some of these constituents. A cure is to be accomplished accordingly by making up the deficiency and restoring the chemical equilibrium of the histological elements. If the blood be deficient in iron, soda and potassa; the brain and nerves lacking in phosphate, the muscles in potassium, the bones in phosphate of lime, then by the method of Respiropathy these can be supplied and proper bodily chemical proportions established. These twelve tissue salts or tissue-remedies are stored up in the body and are given out for proper functioning from the *pituitary body*. When the function of this gland has been full established it will be found that it performs a most important part in the economy and construction of the organism—much greater than the present accepted knowledge by western physiologists of its action on the blood pressure, and its contribution to overgrowth or giantism, and its essential augmentation of the heart's force. It is probable that by an excessive action of the pituitary gland the twelve tissue salts or mineral compounds assisting in the formation of the organism are responsible for the overgrowth of the body or for some overdevelop-

ment of its various parts. The manufactured substance—pituitrin—from this gland protects the organs and muscles of the body from cramps and convulsions. Physicians are now injecting this substance from animals to relieve convulsions of the human organism.

The ductless glands are all closely related to each other and to the general chemism of the whole organism. They have received this name because they lack excretory ducts. For the reason that they are believed to have important relations to the blood they are sometimes described as “blood glands.”

The *thyroid* gland is highly vascular and varies in size in different individuals. The secretion of the thyroid like that of all the other ductless glands falls into the class known as internal secretions, and exerts a profound influence upon the metabolic process of the body, mostly through its influence on the central nervous system. It also has a function to destroy toxic bodies as well as to form a substance indispensable to the organism, aiding in the maintenance of general nutrition. It manufactures a mucin material as well as a secretion known as thyroïdin. The thyroid has been found to play a part in the amount of carbon dioxide given off and probably contributes something to the external temperature. An undeveloped thyroid causes the disease known as cretinism—idiocy—hence, it stands to reason that this

gland is closely connected with the brain or mental capacity.

The *suprarenal capsules*, or *adrenals*, according to Dryer, discharge into the blood a secretion known as adrenalin for splanchnic stimulation, and Schaffer states that this "secretion of adrenalin has a marked effect upon the muscular layers of the arteries, the muscular tissue of the heart and upon the skeletal muscles."

These glands are regarded as a latent source of energy and furnish upon the whole very conclusive evidence of the presence of an internal secretion that is absolutely necessary to the normal metabolism of other organs. The active principle of adrenalin acts upon all the gland cells supplied with sympathetic nerve fibers. Addison's Disease (characterized by a bronzing of the skin) is attributed to a diseased state of the adrenals, as it has been supposed that these glands have much to do with the coloring substance of the organism. Arthritis is another disease in which these glands play an important part.

The *coccygeal* gland, the *thymus* gland, and the *spleen* are the other ductless glands. The *coccygeal* gland, a small body near the end of the coccyx, is the oil producing gland and may be called the reservoir of the sebaceous glands. The framework of this gland is identical with that of other glands, except that the septa contain non-striped muscular tissue. The alveoli are filled with gland substance, consisting of

connected masses of epithelial cells, having in their center a twisted capillary blood vessel.

The *spleen* varies in size and weight at different periods of life. In some diseases it becomes greatly increased in size. Normally its size is greatest during digestion. "The spleen pulp, a dark brown soft mass, contains cells and free nuclei together with blood corpuscles both white and red, many of the red corpuscles being in various stages of disintegration. The large size of the splenic artery suggests that under some circumstances a very considerable amount of blood may be carried to this organ. This has suggested the view that the spleen might serve as a reservoir for the blood when it was not needed for other abdominal organs." (Raymond.)

Some physiologists maintain that the spleen plays an important part in the elaboration of the proteolytic ferment of the pancreas, forming a substance which we may call pro-trypsinogen, since it is supposed to be carried in the blood to the pancreatic cells and changed by them into trypsinogen. "There is some evidence that extracts of the spleen prepared from it when congested during digestion exert a favorable influence on the proteolytic power of the pancreas." (Mendel.) "And there is no doubt that the spleen, like other organs, contains an intracellular enzyme which can aid in the digestion of protein. The products of the action in an acid medium of this enzyme are the same as

those formed by trypsin in an alkaline medium." (Leathes.)

The *thymus* gland, whose pouches grow downwards into the thorax, contains connective tissue and blood vessels, its structure in general appearance bearing resemblance to a big lymphatic gland. It consists mainly of small cells like lymphocytes. Some observers believe that these cells are true lymphocytes derived from the mesoderm, which have migrated into and displaced the earlier epithelial tissue. Since the thymus is concerned in the elaboration of substances which exercise an important influence upon nutrition and growth, the essential elements in it must be epithelial like the elements of other glands with an internal secretion. Chemical differences also exist between the thymus cells and the cells of the lymphatic glands. The most clearly established point in the physiology of the thymus gland seems to be its relation to the sex glands. It generally disappears at puberty. It has a power over the calcification of the bones of the whole body. It has been observed that extirpation of the glands retards their calcification and at the same time has a tendency to lower the blood pressure. "Some physiologists regard it as a producer of red blood corpuscles, while others consider it a former of leucocytes." (Stewart.)

The physiologists of India regarded it as a producer of both red and white blood corpuscles—that it was in some mutual relation with the

spleen in the formation of the leucocytes (white blood corpuscles). They believed that all the ductless glands were in some mutual relation to each other; that it was probably the relation between the metabolism of one tissue and the products of the metabolism of other tissues, which when taken up by the blood and carried to other tissues supplied exactly what was necessary for their complete anabolism. Such influence is explained through the presence of the special products or internal secretions of the ductless glands. And there is no doubt that the ductless glands are physiologically associated with each other and most intimately so. Some of the advanced thinkers in the realm of science today assert that the motive forces of the human body are of chemical origin. In India the medical pundits have always had an instinctive realization of the importance of the ductless glands and maintained that our daily life was in reality a series of chemical reactions. When our various chemical compounds are functioning properly we are well; when there is a disturbance in the laboratory of the body, at once the mistake is made of dosing the body either with a drug from the vegetable or mineral world, or a serum or vaccine drawn from the body of some animal, whether in healthy or diseased state.

Why resort to such things when the body has its own wonderful remedies—the tissue salts, and its well equipped laboratories,—the duct-

less glands, that can call into use fluids which generate energy and correct abnormal tendencies. The chemicals originated thus become powerful agents in the blood which in turn is carried to all parts of the body. Since respiration carries on a chemical affinity with the blood it is possible—and a fact—that the breathing potencies of Respiropathy in relation to the glands—which it emphasizes, the blood, the energies, and the vital force of the entire body, can be a means of correcting the ills of the body and of preventing disease, thereby becoming a lasting benefit.

Dr. Oliver Wendell Holmes, the well-known author and professor of anatomy, in his "Border Lines of Knowledge," says, "The disgrace of medicine has been that colossal system of self-deception, in obedience to which mines have been emptied of their cankering minerals, the entrails of animals taken for their impurities, the poison bags of reptiles drained of their venom, and all the inconceivable absurdities thus obtained thrust down the throats of human beings suffering from some want of organization, nourishment or vital stimulation. If all drugs were cast into the sea it would be much better for man, and so much the worse for the fishes."

Dr. Quain, editor of the "Dictionary of Medicine," said, "Alas, our means of curing disease do not make equally rapid progress. This is not, as some assert, because disease cannot be

cured; it is simply because our knowledge of remedies is deficient. In other words, diseases are curable, but we cannot cure them."

Sir John Forbes is thus quoted in the *British and Foreign Medical Review*: "In a large proportion of cases treated by allopath physicians, the disease is cured by nature and not by them. For a less, but not a small proportion, the disease is cured by nature in spite of them. In other words, their interference opposes instead of assists the case. Consequently, in a considerable proportion of diseases it would fare as well or better with patients, in the actual condition of the medical art as now generally practiced, if all remedies, at least active remedies, especially drugs, were abandoned."

The capacity of manufacturing internal secretions of high importance cannot be attributed entirely to the ductless glands. There are many glands with ducts that contribute their secretions toward the survival of life. It is known that in the case of the liver, the internal secretion is more important than the external, for man or animal cannot survive without his liver, while the liver may be but little affected by the continuous escape of the bile through a fistulous opening. The bile is one of the products of the cells of the liver, and as it is secreted it passes into the gall bladder, where it is stored until needed at the time of intestinal digestion. Bile when discharged from the gall bladder is a viscid fluid with an alkaline reaction. Its viscosity is due

to mucus, which is not present when the bile leaves the liver, but which is added to it while it is stored in the gall bladder, being secreted by the mucous membranal lining of that organ. The presence of the chyme in the small intestine causes, through nervous energy, the gall bladder to empty itself of the contained bile, which is discharged through the common bile and pancreatic duct with the pancreatic juice into the duodenum. After the bile has performed its part in the intestine it undergoes disintegration. The mucin, cholesterin, and part of the coloring matter passes off into the faeces; part of the coloring matter is excreted in the urine; the biliary salts are reabsorbed and enter the blood. Blood poisoning—which so often occurs to some people—is caused when the bile is not normally formed by the liver; and the disintegrated particles are reabsorbed into the blood stream.

The liver cells not only manufacture bile but convert glucose into a substance called glycogen, which is stored up by the liver cells and given to the circulation as fast as the system needs it. The glycogen readily unites with the oxygen in the circulation and aids in producing heat. The return circulation brings the blood directly from the digestive organs, hence, the liver aids in producing important digestive changes that are necessary to the body. The bile secretion has little real digestive value, but other chemical changes taking place in the

liver are important enough to demand that every drop of blood from the food-tube should pass through this custom house. Now, however, it is known that, in addition to its other offices, the liver is a great poison sponge or toxin filter for straining out of the poisonous or injurious materials absorbed from the food and converting them into harmless substances. It is astonishing what a quantity of these poisons, whether from the food or from germs swallowed with it, the liver is capable of dealing with, destroying them and acting as a barrier to their passage into the general system. But sometimes it is overwhelmed by appalling odds; some of the invaders slip through its defense lines into the general circulation producing ptomaines, headache, backache, fever, and a "dark brown taste" in the mouth. One is called "bilious," the poor liver is blamed, and remedies are poured down to stir it up and put it into action—which is very irrational. If the liver was not acting you would not be bilious; there would be a state of collapse, or death. Don't rush for some pain reliever with which to smother into insensibility every symptom of disease as soon as it puts in an appearance. Give nature a little chance to show what she intends to do before attempting to stop her by dosing yourself. On the other hand, don't trust nature too blindly, for the best of things become bad in extremes.

The removal of waste and fatigue products

in the body is by the same means as the distribution of heat, namely, the circulating blood. During the passage of the blood through any active organ, it takes up the fatigue products and all waste materials that are being formed therein and carries them off. Evidently there must be some means by which the blood in turn can rid itself of these, for otherwise, it would presently be so charged with them as to be unable to take up any more. For this service of purification the respiration is the essential act and the organs and glands of excretion the means of carrying them away. The circulating blood and the organs of excretion make up the machinery for carrying away the waste products from the active tissues. And the breathing potencies of Respiropathy cause this machinery to work perfectly under all conditions, and hence fatigue substances and morbid and waste matter always pass from tissues to blood and from blood to organs of excretion nearly as fast as formed.

There is another feature of fatigue which may call for a little comment:—the tiny points of junction between the nerve cells. All mental processes, indeed all nervous activities, involve discharges over chains of nerve cells, and they may suffer impairment because of fatigue; their activities may be more difficult to carry on and in a lesser degree the entire nervous system may be affected as the result of fatigue products. The rest and sleep period allows time for this accumulation to disappear. Thus, at the end

of a sufficient rest period nerve fatigue should have disappeared and the body be restored to its full measure of efficiency.

The internal secretion of the pancreas is also indispensable. It is a viscid fluid alkaline in reaction, having a high specific gravity. The internal secretions of the reproductive glands, the ovaries and the testes, are undoubtedly concerned with the metabolism in the body.

Enough has been said simply to show that all the internal secretions point to an influence on metabolism at one stage or another during the existence of the body. The whole complex of intermediary metabolism and its influence must constantly be taken into consideration to insure good health. Science has proven that many diseases are the outcome of a disordered condition of the blood. How then can satisfactory results be expected from any treatment that does not reach the blood, the seat of trouble, and rid the system of the cause of the disease? Or from adding to the blood other foreign substances in the way of various medicines that make in their chemical reactions still further demands upon the blood?

We hear so much about the lack of iron in the blood. What becomes of the iron in the body and why is it not doing its office to the blood? People often fail to get the strength out of their food because they have not enough iron in the blood to enable it to change food into living matter. From their weakened nervous condi-

tion they know that something is wrong, but they cannot tell what, so they generally commence doctoring for stomach, liver, or kidney trouble, or for symptoms of some other ailment caused by the lack of iron in the blood. This thing may go on for years while the patient suffers agony. Many times the patient is dosed with inorganic iron products or receives it by the way of injections without beneficial results because iron taken into the body in this manner does not assimilate with the organic iron. What has become of the organic iron, that it is not functioning in the blood? It has not left the system. The changed condition is due to a gradual accumulation of another substance owing to a lack of oxygen. Iron has a great affinity for oxygen and it is necessary to maintain the caliber of iron. As the blood is built up from the chyle which is formed from the chyme by the action of the bile and pancreatic fluid, these fluids are responsible for the change in the iron of the system when there is a deficiency of oxygen. Hence, by the conversion in the system of those foods which contain iron, it may be supplied in a form that will easily assimilate with the iron of the body. Even after food is properly digested and completely assimilated, it is absolutely useless to the body unless it is oxidized. The increased oxidation within the cells is favored by respiration.

Increased blood movement together with deep breathing increases the amount of digested

food materials brought to the cell and also increases the number of red blood cells,—the means whereby the oxygen is carried around to the individual cells. Thus the vital force and fires of life are greatly improved. Thousands of people are but half alive, but half efficient, because they are but half breathers,—their vital fires are nearly smothered all the time.

Since the philosophical principle of the Science of Respiropathy is to deal with nature's laws of the body, it is necessary for the attention to be directed to the static, potential and dynamic energies of the body. A great many experiments have been performed to determine whether there is any electrical action in the human body and some remarkable things have been found out. Professor Raymond wanted to see if a muscle had a current in it while it was in action. He ran a current detector to two cups of conducting water and placed a finger of one hand in one cup and one of the other hand in the other cup. When he moved his right arm the current detector showed that a current of electricity passed from the right arm to the left and when he moved his left arm the reverse happened.

Others have proved that when light falls on the eye's retina a current of electricity passes along the optic nerve, and that if a nerve and a muscle are put in contact at one end and connected to a current detector at another, a current passes. A great many other experiments

prove that currents of electricity are actually generated in the human body.

The exact interaction between the nerve and the muscle has, so far, not been satisfactorily explained by the scientific world. It is known that some kind of an impulse is delivered by the nerve at the command of the brain to the muscle and in obedience it either doubles up or straightens out. Their evidence so far seems to indicate that this impulse is of electrical nature. But the actual energy used up in contracting a muscle, of course, comes from the fuel energy of the body—all the nerve does is to make the muscle use it and send it out.

Energy as science has discovered traverses cosmic space at absolute zero of temperature, but when this radiant energy strikes atoms or molecules of matter able to receive it, then, at certain rates, heat is the result. If this energy strikes responsive living nerves, as in the retinas of eyes, in connection with a living brain, the effect is called light. This energy is necessary to the human body and on contact with it may be rendered available as electricity, likewise cosmic magnetism. Many chemical effects are due to radiation of energy. Chemism is in innumerable phases and reactions. Magnetism induces electricity and electricity induces magnetism.

These currents pervade the human body. The question is often asked, If these currents pervade the body, where are they? They must be

in some manner or place stored up in the body.

The Rishis and Pundits of India for centuries made a study of this question and came to the conclusion that cosmic energy or prana was stored up in the *pineal* gland; that magnetism was stored up in the ductless glands, which have previously been named in this chapter; and that in those glands which have a double office of being—both ductless and duct, viz., the pancreas, liver and reproductive glands—was stored up electrical energy, and that these currents of energy are sent out over the nerve tracts as nervous impulse. Thus we can see how a little thread of a nerve can force a big muscle to contract and lift a heavy weight.

Then we can readily say that the effects of the freedom of energy or rather of balanced energy are magnetism, electricity and astral fluid. The process of breathing furnishes the means for conveying energy through the body. It is a fact that physical tissue is formed from the air inhaled—from the solar and etheric energies of the air, and not from food. Food taken only sustains that which is already formed and furnishes power of combustion setting free heat or potential energy.

The static energy is the established energy from existence. It is the primal negative and positive phases of force, the negative and positive force of the body and brain—in other words, the electrical and magnetic currents of energy of the system. It is the fundamental move-

ment which is keeping the balance of equilibrium of the body and of life in the body. It is the energy that contains the heat expansion and also purification which gives to the body its purer and newer form. Static energy is located with one pole at the solar plexus and the other at the pineal gland.

The potential energy is the motor of the agent of life and of the body and is controlling the static or formative energy. When not acting as control then the formative energy reacts upon itself causing destructive conditions in the body and depolarization of its nerve currents. You have heard of "polarity" and "polarization" in connection with many things, especially with electrical phenomena. Polarity is defined by Webster as, "The quality or condition of a body by virtue of which it exhibits opposite or contrasted properties or powers, in opposite or contrasted parts or directions, or a condition giving rise to a contrast of properties, corresponding to a contrast of positions." And polarization is defined as, "The act of polarizing or state of having polarity." Well, then the process of erecting the static energy is that of polarizing the magnetic and electrical particles of chemical affinity in matter or substratum of matter.

The dynamic energy, that which we are breathing into the body and absorbing by the pores of the body is gradually modifying and keeping up the medium of exchange in the energies.

This energy arousing the potential energy forms vitality. This is the point where vitality differs from the other forces of nature. It is the essence coming out of the control of the potential with the formative or static energy. It is this same essence of vitality, which we may call astral fluid—for lack of a better name—in its relation with neuricity (nerve force) that makes life everlasting, permanently fixed; hence, life is not a homeless force, nor is it the energies of the body. The nerves handle the stored-up energy as an accumulator, and the energies are setting up new transit lines through vitality and over the transit lines the brain is conducting vitality to all parts of the body in conjunction with the blood. Without energy the power of motion and sensation would be lost.

The dynamic energy, or prana, performs or governs five different organic functions. It is:

1. That power which moves the lungs and draws the atmospheric air from outside within—giving life and health to the system. Since the act of breathing is the real key to the changes of the life current it bears the name of Prâna.

2. The power performing digestive functions and assimilation; that carries the nutrient forces where they are needed. This phase of the dynamic prana is called Sâmâna.

3. The power which causes elimination from the system and governs the excretory functions. This is called Apâna.

4. That force of the energies which resists breaking down—disintegration; that power of energy working with potential energy in the blood. This is called Vyâna.

5. That power of the energy which works in every part of the nervous system and with speech. This is called Udâna.

This chapter would be incomplete without drawing attention to the history of medicine as a science in India, which dates from the Vedic period, many thousand of years B. C. And it should be remembered that medicine in ancient India was beyond the lust of power—it was treated as an art and developed for the sake of doing good to humanity.

Sushruta is celebrated as the first teacher of medicine in India. The attainments of the medical practitioner as laid down by this distinguished author were very thorough. Surgery attained a high degree of perfection. While he was the first Indian author to make a classification of drug remedies and to construct a scientific terminology, he based his arrangement upon the assumption that disease is either an impairment or vitiation of the force which permeates the fluids of the body, and influences their circulation, absorption and secretion, or else an inordinate activity of the natural appetites and emotions. Sushruta's classification of medicinal plants has a specific significance and accords with the more elaborate and precise ex-

perience of the present day. He is very tenacious of the injunction to use only fresh drugs as more certain in their properties and powers. He divides his remedies into two large classes, according to their effects upon the human system during the process of disease: the first including the evacuants of morbid humors, and the second comprising those which regulate or moderate the excessive action of such humors. The two classes bear the Sanskrit names of Sânskhâdhana and Sânskhâmana. The former embraces a miscellaneous group of purgatives, expectorants, diaphoretics, diuretics and some blood depurants or alteratives, indicating a belief in the presence of active principles in them which operate through the blood upon special organs or glands in order to relieve the body of a supposed morbid agent, irrespective of the changes which they might severally induce or bring about in restoring diseased parts to health. The second includes a group of thirty-seven remedies, the sensible effects of which upon the body are gradual, being indicated in sthenic diseases or in the chronic stages of diseases in general.

Châraka, dating from the same period as Sushruta, the most accomplished medical author and practitioner of his time, was more precise in his classifications and far broader than his successors in his entire views. Constant experiment and experience, a searching far and wide, he indicated must be the practitioner's true

guide. Accordingly while devising out of some five hundred different drugs, fifty compound groups for selection which might satisfy all possible indications in the practical treatment of disease, he invited further investigation of the action of these compounds and likewise the ascertaining of the virtues of Nature's part with these remedies. In his terms of classification he had in view the specific action of the remedies upon the functions of the body. He stands divinely high above those who would restrict, limit and proscribe. He stated at that remote period that all medicine could be expected to do was to assist Nature and that a physician should be the friend of Nature and not her enemy; he should be able to guide and direct, and not throw interference, fresh obstacles in the way of recovery.

Next in honor to the Shamans, doctors who were called holy men, stand the physicians. They apply philosophy and science to the study of the entire nature of man; they cure disease, some of them by diet, and others by the science of breathing, rather than by medicines.

King Priyadarsin filled India during his time with hospitals and established public dispensaries at the four principal gates of Pataliputra and to promote a cure for all who entered the city he placed the Materia Medica and Respiropathic physicians side by side to practice in these hospitals for the good of humanity. "Those complaints which medicine will not cure," says he, "correct breathing exercises

will cure. What oxygen and the solar energy will not cure, are incurable indeed." He was great because of his breadth of knowledge and his resolution to cultivate amicable relations between all the schools of healing beneficial to humanity. He believed in the spirit of freedom which is seeking for truth in science whatever may be its merits or its source.

There is, however, a distinction to be made between the Science of Respiriopathy and *Materia Medica* on general principles. When we stop to think of all the sickness, suffering, deformities, defective nerve control, mental inertia, we cannot but come to the conclusion that mankind needs something more than mere drugs and medicines. These afflictions announce to us that there is a trinity of being in man, a physical, mental and moral unity, and that that science which will meet their needs must recognize the force back of the muscular, vascular, glandular and nerve supply; that the muscles, glands, nerves, and blood are a part in the expression of the mental make-up, and are to a large extent the instruments of thought, feeling, emotion, and indeed of the whole personality. How often we find this pent-up nerve energy, accumulated at high pressure and unable to find an outlet suddenly exploding in some form of hysteria or common neurosis; functional disturbances are the outcome of such explosions and become the cause of many ailments of the body, affecting the structures of its

material tissues. Respiropathy is that science which deals in an intimate and immediate importance with health, physical, moral and mental.

Again let me say, that in the future through intellectual progress the symptoms and effects of diseases will not be taken for causes, and neither will there be so many violations of the laws of the body, and further that through the enforcement of hygienic laws there will be less disease.

Those who are sufficiently interested to think on this vast subject will realize that in its deep and intimate relation to the laws of Life itself, the Science of Respiropathy will be one of the principal factors in bringing about these achievements.

CHAPTER VII

RESPIROPATHY IN REJUVENATION AND RE-EDUCATION IN PROLONGATION OF LIFE

“Let no man be alarmed at the multitude of the objects presented to his attention; for it is this, on the contrary, which ought rather to awaken hope. If there were any among us, who when interrogated respecting the objects of nature were always prepared to answer by facts, the discovery of causes and the foundation of all sciences would be the work of a few years.”
(Bacon.)

The purpose of this chapter is to show that we may overcome and prevent the causes which are visible in effect as age advances and thus prolong life and retain youth; and further, that by means founded upon scientific facts of breathing, and moral living, this may be accomplished for an indefinitely lengthened period.

The attempt to deal with a matter of such vast importance as the prolongation of life and rejuvenation of the body, will perhaps bring about adverse criticism. In the first edition of a book hurriedly written in moments snatched from the turmoil of general practice, many minor errors are sure to be found; but as facts have been taken for a beacon, there is no error in principle. I only ask those who criticize to imagine themselves for the time in the position

of Astraea, the goddess of justice, and not weigh the scale too heavily with prejudice.

Notwithstanding the wonderful physiological, anatomical and philosophical discoveries, the question of rejuvenation has been one of the many that has been neglected by scientists. Nature speaks to us in a peculiar language, in the language of phenomena. She answers at all times questions put to her in that language; such questions are experiments. In nature there are distinct reasons for every change, for development, growth, disintegration, and even death. If with our minds free from set theory and unbiased by hypotheses, we study and ask Nature the cause of these changes we shall surely get the answer.

Let us inquire into the causes which have a share in producing the changes which are observed as age advances. What are the differences between youth and old age? Why do the various functions of the body gradually cease and man become old? In youth we know that the various organs and structures of the body are elastic, yielding, and pliable; the senses keen, the mind active. In age, these qualities are usurped by hardness, rigidity and ossification, the senses are wanting in susceptibility, and the mind in memory and capacity. These changes are due firstly to a gradual accumulation of fibrinous and gelatinous substances; secondly, to a gradual deposition of earthly compounds, chiefly phosphate and carbonate of

lime. These acting in concert diminish the caliber of the larger arterial vessels, and by degrees partially and sometimes fully obliterate the capillaries. By these depositions every organ and structure in the system is altered in density and function; the fluid, elastic, pliable and active state of the body gives place to a solid, inactive and aged condition. And finally the whole system is "choked up," life in the body is ended and terminates in the so-called "natural" death of old age.

Among western physiologists and medical philosophers generally, the idea prevails that the ossification or gradual accumulation of earthy salts in the system which they characterize "natural death" is the result of time. But investigation shows that such an explanation is unsatisfactory. For in the first place if old age—which is merely the number of years a person has lived—is the cause of the ossification which accompanies it, then if like causes produce like effects, all of the same age should be found in the same state; but investigation proves beyond doubt that such is not the case. How common to see people who are only fifty years old as aged as others at seventy-five or eighty. From this it follows then that age is not entirely due to such as a cause, but that it represents effects from other causes.

Looking into the cause or source of these deposits which gradually accumulate from the beginning of existence to what is termed old age,

it is necessary to give our attention to the great vital principles of physical life, which are centered in the energies and blood. The influence which establishes the great vital principles not only of physical life, but of our mental life, operates through the impulse to organic breathing. The perfect balance of the magnetic-electrical life forces can be maintained only through deep rhythmical breathing of pure air. With the first breath we inhale this great onrush of Prana, cosmic energy, and its currents are sent to all parts of the body, to the farthest ends of the gross vessels, nerves and blood channels of the organism. The succeeding moment imparts the backward impulse, and with the receding flow of vital energy, exhalation takes place. The throbbing of the heart, its expansion—the diastole—and contraction—the systole—corresponds with the flow of energy. But the velocity of these inward and outward, forward and backward movements of Prana (energy) varies in different organisms and this is due to environment. And we must not forget the laws governing the solar energy—this may have much to do with the velocity of the first breath, and the correspondences between the macrocosm and the microcosm, modifying the power of breathing in the body. This would naturally make a difference in chemical affinities—with totally changed nervous systems and physical structures. The need of the hour is better to understand the body, its activities, and to recognize

that it is always in the making, beautiful in its simplicity when fully understood; and that the Great Breath and Life of the Universe guided and directed by the brain, nervous systems, blood, and restrained by the organs, ramifies throughout the human entity, making the body a living temple. It is possible, then, to realize this great principle and law of rejuvenation.

The fact being that it is these deposits gradually accumulating which age the body, the energies and blood must be looked to as the direct physiological cause of such accumulations.

These can be kept in perfect order through the breathing potencies of Respiropathy and thereby age prevented. The purification of the blood, improved action of the liver, kidneys, and bowels, to increase nutrition, to promote secretion and to cause the energies to render up their force as required, constitute the means by which rejuvenation of the body may be accomplished, as well as a feeling of comfort very gratifying to the person. The more the labor of digestion is economized the more energy is left for the purpose of growth and action. The functions of the stomach and intestines cannot be performed without a large supply of blood and nervous power. This supply of blood and nervous power is provided at the expense of the system at large. Attention should be paid to this, not only with adults, but with children also. With some children it is very noticeable

in diminished energy and in smaller growth. The inference is then that they should have a diet which combines as much as possible nutritiveness and digestibility. Above this stands the power in correct breathing, the oxidizing of the food.

In old age the body differs materially from that of youth,—in action, sensibility, and in composition. The most important change that exists, which accounts for the many differences in the brain between youth and old age, is the change in the blood vessels supplying it. The arteries in old age become thickened and lessened in calibre from gelatinous and earthy deposits. This condition is more easily detected in the larger vessels, but all undergo the same gradual change. Thus, the supply of blood to the brain become less and hence the diminution in size of the organ from the prime of life to old age; thus, the functions of the brain become gradually impaired, giving place to loss of memory, confusion of ideas and the inability to follow a long current of thought.

As age advances, the energies of the ganglia system decline; digestion, circulation and the secretory functions are lessened; the ganglia diminish in size, become firmer, and of a deeper hue. The nerves become tougher and firmer, the medullary substance diminishes. The sensibility of the whole cerebro-spinal system decreases; hence, diminution of the intellectual

powers, lessened activity and strength in the organs of locomotion in advanced age.

The object of the Respiropathic Science in health and for rejuvenation is to preserve the body and guide these variations to a given center of bodily equilibrium by prolonging and keeping the formative or static energy intact by certain breathing exercises, thereby keeping the potential energy renewed and in its relation to the dynamic energy breathed into the body and also absorbed by way of the pores. The nervous energy in this manner being kept at par and doing its office, the nerves will be able to keep their tone, the arteries remain as in the prime of life, and the secretory functions normal. All the changes observed as age advances may be checked and prevented. And why not? Life itself only reaches maturity — why permit the body to become old and decrepit? The general principles whereby to preserve the body and thereby prolong life, become fundamental laws belonging to life. It is just as possible to rejuvenate the body and regain youth as it is to cure the body from its ills.

The fountain of youth is to be found within the body and not outside of it; search as we may we shall not find it elsewhere. The ancient Pundits of India discovered it and declared that the outcome of the metabolic relation of the ductless glands interacting with those glands the nature of which is both duct and ductless, is

the source of the fountain of youth. This fountain within can be made to give up its elixir. As I have previously said, the human body is a microcosm, having in itself the known primary elements. It follows that everyone of these elements or its combinations may by proper activity and influence serve to modify and control the action of the organism through influence of correct respiration, the means of proper oxygenation and oxidation. As the tendency of all change is toward stability, we arrive at the following law, which is one of the most recent generalizations of modern chemistry: In all cases of chemical change the tendency is to those products whose formation will determine the greatest evolution of heat. Heat is the principal means of supplying energy and by increasing energy sufficiently the tendency of age and of old age may be overcome. The question is often asked, how can the lawful conditions of Nature be checked or overcome. I answer: First, that to be decrepit or feeble is not in accordance with the laws of Nature; and secondly, that just as a weight may be lifted against the force of gravity, so may the chemical tendency of age be overcome by a sufficient energy acting against it,—and the same may be said of disease.

Looking at the movements of the body, what do we find—that all motion is the outcome of a force of energy. The movements of the muscle are the effects of a force of energy and we find it so throughout the whole body. Energy proves

to be a potent factor in the indirect relation to blood pressure and in the control of the circulation, as well as by its direct influence over the vaso-motor nerves. It is force—energy—that permits the glands to work in common together to perform their work in a natural, normal manner. When there is not sufficient energy the increased secretion of some of the glands results in raising the blood pressure; especially is this so of the adrenal glands. The increased secretion of adrenalin must result in raising the blood pressure, and thus contributes to the undesirable results of high tension and hardening of the arteries.

Again, sensation—which includes motion—is, after all, only liberation of energy of position, which has by some chemical process become stored up, either in the living brain mass or some special organ, or muscle. Hence, energy of position and energy of motion are the sustainer of life, the keeper and protector of the living organism, and this force can preserve it for an indefinite time.

In every being throughout animated nature, from the most insignificant insect to the most enlightened, ennobled and highly developed man, we note a deeply rooted love for one possession before all others, and that is the possession of life, for the use of all his or her faculties. What will not a man give to preserve his life? What would he not give to prolong it? Riches, title, honor, power and worldly prospects

are as naught compared with the value which every sane person, however humble, and even miserable, places upon the preservation and prolongation of his life.

It is our duty and divine inheritance to keep the body as long as possible, and in a sound and healthy condition. The Everlasting Life takes up its habitation in the new body and it is our duty to improve the bodily structure, replacing broken down material with superior matter, avoiding the agencies of destruction which abound everywhere. How? By studying the habits of eating, the chemistry of food, what we drink as well as what we eat, the laws of cleanliness and of proper exercise both for body and brain.

Fresh air, ventilation and breathing are all concerned in the development and operation of the intellectual powers. Oxygen is indispensable to the operation of mind as well as body.

Unlimited power of Being lies through emotion-training, what may be called mental gymnastics. The physical man reflects the picture of his emotions. It is possible to know a person's mental state by his physical gait and carriage. Healthy emotions, and the gait is elastic, the physical poise is energized and the bodily movement indicates courage and self-confidence. Unhealthy emotions, and the gait is inelastic, every muscle weak and relaxed, the walk sneaking or slovenly.

Emotions either increase or decrease the

power of the mind to control the nervous system evenly. Self-possession always steadies the nerves.

The intellectual consciousness which presides over the brain and works through the nervous mechanism of the body really controls both nervous systems—the involuntary and the voluntary. As we have previously stated in another chapter, the sympathetic nervous system does not enter the skull, but it is connected indirectly with the sensory nervous system; thus, in a sense both of these great systems of nerves are presided over by the mind. The sympathetic nervous system is largely concerned in the formation of habits and the carrying on of the various vital functions of the body. This involuntary nervous system regulates secretion, digestion, assimilation, oxidation, circulation of the blood and other important fluids, elimination of poisons, and the action of skin and bowels. The cerebro-spinal system or sensory nerves control the voluntary movements of the body and to some extent influence and regulate the majority of the involuntary functions, operating more especially through the central consciousness. The function of this system is largely influenced by the taste, smell, hearing, sight and feeling. It operates mainly by the impulses which it receives and sends out through the cranial nerves, brain, spinal cord and its many branches. Hence, when these impulses are lessened or checked, the result may be the

loss of hearing, partially or entirely, defective sight, etc., which are common as age advances, but which may be overcome by reaching the cause of the lessened impulse or energy. The hearing and sight, sense of smell and taste, may be rejuvenated and even recovered if lost. Of nearly all disturbances of the ear, the primary cause is due to a disturbance of the lymph circulation in the semicircular canals of the internal ear. Among the symptoms produced by hyperaemia or congestion of this part of the delicate mechanism of the internal ear are vertigo (dizziness), nausea, head noises, and sometimes vomiting. These are conditions not only of age but those often found in children and apparently healthy adults. This condition not only leads to deafness, but is the cause of sea-sickness and car-sickness. A child's ear-ache, running ear, etc., should not be neglected. The cause is an interference with the lymph and blood flow, which may produce many disturbances to the physical organism. By sufficient blood passing to the head many disturbances of the organs of special sense may be avoided.

I have said the primary cause of ear maladies and deafness is due to inflammation owing to congestion of lymph and blood. There are other secondary causes—the eustachian tube may become affected from this primary cause, or from the throat; the tympanum or drum may be perforated, the wax glands may cease to work, or they may overwork without the lymph flow and

cause hardening of the wax. Sometimes the auditory nerve becomes affected and no sensations are transmitted to the brain. It is possible to correct these conditions by the use of Respiropathic Science which not only corrects such disturbances in children and adults but is most valuable in rejuvenating the hearing of the aged. Through Respiropathic breathing potencies the life-giving oxygen is set free precisely where it is needed and the waste matter is oxidized in the way that Nature would have it done were her machinery not out of order. They increase to a marvelous extent the combining power of atmospheric oxygen with that of the body and have a wonderful effect upon the poison clogged organs.

Appeal to your own reason. If Nature thinks so much of the oxygen and the energy of the air that she insists upon filling your lungs with it twenty times per minute with normal breathing, think of the results when the body machinery is supplied with all that is needed of Nature's own specific. It will clean out the poisons, remove the wastes, bring back the color to your face and make life worth while.

Does this surprise you? How many times do you breathe per minute? It stands to reason that nature would not demand this thing so often from the cradle to the grave were it not the most important of all the vital processes. Why? Simply and solely so that every drop of blood may come frequently into direct contact with

oxygen. The lungs are aggregations of cells with remarkably thin walls. On one side of these walls flows the blood, on the other is the air breathed into the cells. The oxygen passes through the thin wall, seizes upon the waste carbon in the blood and passes out again as the poison carbonic oxide. Nature forces every drop of blood into a bath of oxygen once every minute. When there is not sufficient oxygen the blood is not properly purified. Unfortunately there comes a time when this results in functional disturbance or disease. Nature sends forth a cry for help. Not only can help be obtained but the cause of the trouble can be removed by the exercises of Respiropathy.

By the practice of Respiropathic Science the health may be kept perfect, as well as the whole body and brain renewed and rejuvenated through the exercises by their action on the vaso-motor nerves, on all the glands of the system, in the purification of the blood, and by their power in establishing polarity of the energies, and force to energy of position and energy of motion. Energy of position and energy of motion constitute all wave motions; therefore, all sound—hearing, light—sight, and heat—temperature, depend upon polarity. And breathing likewise is dependent upon polarity. When the energies are depolarized breathing becomes imperfect, abnormal.

When the energies of the body are all polarized and doing their normal office it has been

demonstrated in India that the breath could be held for twelve minutes, three times as long as physiological record concedes that such a thing could be done and retain life in the body. Physiological and scientific data place the time at four minutes. In the early part of January, 1903, my father demonstrated that the breath could be held for twelve minutes. So far as I know this is the longest period of voluntary suspension of respiration. On March 26th, 1915, in the course of some experiments in respiration in the University of California Medical School, an undergraduate student by the name of Horner held his breath ten minutes, thereby breaking the record for "voluntary suspension of respiration," which is the way the technical papers put it. Says Dr. Saxton Pope, instructor in surgery in the Medical School, writing in *The Journal of the American Medical Association*, July 3, 1915:

"This was accomplished while having the student lie on a table, with a pneumographic belt attached about his thorax and communicating with a kymograph. Slow, deep inspirations were taken for two minutes; this eliminated a good portion of the carbon dioxide from the blood. A breath of oxygen was then taken and the time-marker started. After two minutes of holding the breath there was a slight relaxation of the respiratory muscles. No desire to breathe was experienced until six minutes had elapsed. The belt having been placed over the

diaphragm, the pulse-rhythm is shown throughout. From this time on, the conscious effort to hold the breath increased until an involuntary twitching of the abdominal muscles was quite apparent; but no respiration took place. All the time the pulse was full and strong, the color good. No oxygen-want appeared. At the expiration of ten minutes some vertigo occurred, and the impulse to breathe having become imperative the first inspiration was taken—ten minutes and ten seconds having elapsed. No great hyperpnoea, no weakness, no heart-changes appeared. The student rose from the table and went about his class-work. Mr. Horner, on whom this experiment was tried, is a swimmer and has participated in underwater contests. So far as I know this is the longest period of voluntary suspension of respiration on record.”

I may take the privilege to add that it is perhaps the longest period on public record, as many of the experiments and demonstrations in my native land, India, were not put on public record, being only exceptional cases. The Science of Respiropathy is being corroborated by the investigations of many noted physicians and they are indorsing its usefulness for the benefit of humanity, especially so for the prevention of the ills of the body and for the maintenance of bodily integrity. Correct respiration (1) removes mucus or residuum of the food, while at the same time it stimulates the flow of diges-

tive juices, (2) accelerates the natural flow of bile by increased activity of the liver, (3) stimulates the increased flow of urine, (4) increases the volume of the blood, stimulates circulation and vitality, producing warmth to the body. All these things contribute toward the youth and health of the body and integrity of the mind.

You are familiar already with the fact that environment plays a part in our life as to whether we are old or young in body and manner. One of the first steps toward power and strength is to master our environment which is really an unappropriated part of us. It is necessary to know how to get along with one's environment, how to react to the changes in one's environment, how not to worry over things that cannot be changed. The chameleon is a fortunate animal. It has power to change its own color to harmonize with the color of its environment. There are few things in life more difficult for a wide-awake mind to endure than monotony. It is safe to say that the nerve energy is flowing only from a small group of nerve-cells and the restricted area of brain matter and nerve energy lying waste, fallow, for too long a period not only ages the body but dulls the mentality.

Monotony in children's lives often causes them to be very dull mentally and weak physically. Another dangerous practice that often is indulged in both by parents and care-takers of children, is the quieting of them by trying to

frighten them with the bogie-man, policeman, black man, etc. Fright or fear in infancy may affect the nervous system through the whole life, or it may cause the stoppage of secretions and bring about congestion to some of the organs of the body. Colic, stomach troubles, croup, quinsy, bronchitis, asthma, and many nervous diseases of the throat in later years may be due to this very cause. Fright to an infant may also dull the mental faculties as cerebral nutrition is then suspended. Respiration is always checked by fear or fright, and the person may from that time on, whether child or adult, have wrong habits of breathing. Mouth breathing encourages many of the complaints so widely suffered in connection with the teeth. When the mouth is closed during breathing a secretion of saliva takes place, tending to cleanse the teeth and gums. Respiropathic breathing exercises are able to correct such difficulties.

Beside the breathing potencies of Respiropathy for the cure and prevention of ills of the body, there are other breathing exercises or breathing gymnastics that may be used in health to keep always the tone of the bodily functions and organs normal, both for children and adults. These keep the whole system continuously vitalized and the mind clear and active.

There is nothing in the realm of science that unifies and reduces to a common basis from a few simple scientific principles a system of

treating disease—with a permanent cure and a sure preventive for the ills of the body—as does Respiropathy. Through all ages alchemists, scientists, doctors of all schools, have been searching in vain for an elixir which would rejuvenate the body, cure all human ills and prolong human life. This elixir is to be found in Nature—the forces of life and organization are the only true builder and healer.

This strange power of Breath and its varied uses. Did you ever stop to think, Where do we get this Breath? What Breath do we breathe or inspire?

“As a man thinketh in his heart so is he.”

Even so,

“As a man breathes, so is he mentally, morally and physically.”

PART II

CHAPTER I

PSYCHOTHERAPY

RESPIROPATHIC Psychotherapy, the cure for mental maladies by the science of breathing exercises, must not be confused with so-called "mind cures." It has nothing to do with any cult, "ism," or psychic fad. It is not based on any sect or form of religious belief. I approach the subject of healing moral despair and mental maladies from the standpoint of the physician and from that of physiological psychology. I am compelled to say that disorders of either mind or body react the one upon the other. In many instances it is the disordered physical health which is to blame for the mental maladies or depressed mental states, and each will tend to make the other worse until such time as the body regains its health or the mind its equilibrium and lost mastery of the emotions.

There is no doubt that respiratory influences are the cause, cure and prevention of such diseases.

The fatigue, for example, accompanying neurasthenia and following nervous shock is neither a true psychic nor a real physical weariness, but due to the deflection of prana, the currents of energy passing on the fibers of the nerves. These currents of energy are responsi-

ble for all mental and physical vitality when properly conducted. When deflected or interfered with they set up either mental disturbances or physical disorders, or both. Hence, the scientific action of mind over matter can only be accomplished by way of the sentient nerves. The nerves of sensation are carrying all the messages from the outward world into the brain, and to the energies of the mind. The efferent action is again conveying and registering them toward the body. Hence, the combined mental and muscular movements, as in anger one often strikes a person before he is aware of what he is doing.

It is these currents of energy operating on the nerve fibers that Respiropathic Psychotherapy deals with for the cure of mental disorders.

The energies of the mind are ever in a ceaselessly active state. It is possible for a group or a number of groups of ideas to become dissociated in the mind producing the phenomenon of absent-mindedness, or, being still further dissociated, of a double personality. Forgetfulness and hysteria are also demonstrations of transient dissociation. Associative memory may be not only the basis for worry and fear, but may explain even the reproduction of the emotions and fixed delusions.

There is also such a thing in the mental realm as psychic insurrection or automatism—a group of ideas may assume an existence independent

of the psychic law as a whole—the resulting action over the mind is that of obsession, and the domination of the body by fixed and uncontrollable habits.

Again, the cause for much nervousness, fear, worry and even obsession, is sometimes found to have originated in connection with dreams which subconsciously influence the mind although the dreams themselves may not be remembered during the waking hours. An unacceptable or unacknowledged group of ideas in the mind sustains the same relation to the mentality that a foreign substance does to the physical organism. Such disturbances are seldom overcome by mere resistance. They must be mastered by mental assimilation and as well as the functional physical disorders, can be treated successfully by the Science of Respirotherapy, and Respiropathic Psychotherapy.

Most of the methods of mental healing in vogue are based on suggestion. But why suggestion? Suggestion is in itself a cause of mental disorganization. If persisted in it destroys the powers of the will and some of the faculties of the mind. The principles of individual sovereignty must be recognized in nature—nature is concerned with completion. Suggestion may also become disproportionate, misadapted, and so over-developed as to result in neurasthenia, hysteria and even insanity.

The process of breathing in accordance with the laws of respiration through the Science of

Respiropathy is the sure cure for all such mental ills. Through the practice of this science such ills may be entirely prevented. Re-education of the mental states is possible through changing the currents of mental energy or by stimulating them so that they will carry on their proper conductivity to the sense organ. Mental activity in its overt conduct and through the internal physiological changes co-ordinating with the peripheral or marginal consciousness, often spoken of as the subconscious mind, that great force of the mind which receives and holds all, is capable of developing a vast realm of mental energy which ordinarily is not in use. It is by means of rhythmic breathing and other breathing potencies (modifications of breath) that this vast source of energy can be tapped and made available in the work of the daily life of every person.

It should, further, be remembered that there is no sensation or emotion ordinarily excited by influences from without which cannot also be set in action by the nerve centers within the body, and then be so referred outward over the nerves that it will really seem that these sensations actually were originated by external stimulation. Anger, fear, worry, hatred, such states of mind lessen breathing and thereby favor an undue accumulation of poisonous gases in the blood and tissues. These gaseous poisons circulating in the blood serve still further to depress the mind and affect the person—who is without

doubt a shallow breather. This is a simple illustration of how from a small and apparently insignificant primary cause either physical or mental disarrangement can spread and multiply until the entire human organism is profoundly affected.

Deep natural breathing increases the output of carbon dioxide (CO_2) in the expired air. In contrast with this desirable state, fear and melancholia never fail to decrease the amount of carbon dioxide in the air which comes from the lungs. It is evident that deficient and improper breathing is directly responsible for the harmful accumulation of these poisonous and undesirable gases in the system.

“Prevention is better than cure” is as true of mental hygiene as it is of physical hygiene. One of the greatest services which the mind can render the body is along the line of preventing disease and maintaining health. A cheerful natural state of mind possesses curative value. Cheerfulness prevents weariness by its power to decrease the production of these subtle poisons which are generated by fear, anxiety and worry, and which, when thrown into the blood stream, cause depression. Again, cheerfulness helps to conserve the red blood corpuscles, and has a valuable influence in combating anaemia, as cheerful persons generally breathe deeply and naturally. While at the same time a naturally cheerful attitude of mind is an aid in the body’s efforts to resist infection through the medium

of the white blood corpuscles which possess the power of catching and destroying the microbes of disease. A well-balanced mental control prevents worry and grief which in a large measure are responsible for a high nervous tension, elevated blood pressure and heart palpitation.

Mental states have much to do with good circulation through the skin, preventing vascular spasm, or congestion, which is so often responsible for inactive skin and habitual cold hands or feet.

We are powerless to use the energies from the mind and brain, and even from assimilated food-stuffs unless we have present a requisite amount of oxygen to liberate the energy. Since the depth and rate of respiration directly determine the oxygen intake, it is evident that even the vital processes of oxidation in the individual cells and tissues of both the body and brain are dependent upon the breathing movements.

CHAPTER II

PHYSICO-PSYCHOTHERAPY—NERVOUS SYSTEM— MIND ORGANIZATION

ONE of the most important facts in the relation of the mind to health and disease has been largely overlooked in the past; that is, the power of the mind to produce functional disturbances, which when kept up from day to day become chronic and organic and may then react upon the brain, setting up disorders there.

More and more we are coming to look upon the human organism as a whole—a unit. In many diseases it is advisable to treat the whole physical man, not merely to treat the local symptoms which are so often taken for causes. It is of vast importance to human well-being that a correct relation be established between body and mind. This relation is established through nerve force or the neural energies. Nerve force is a substance which is generated in the cells of the brain and spinal cord and sent out through the system of nerves to give power to the organs and the whole body as electricity is sent out through wires to furnish light, power and heat. With plenty of nerve force there is life and health, with little nerve force the body is weak and sick, and without it there is no life at all. If this nerve force—which is supposed to be similar to electricity—is weakened the part sup-

plied by it becomes feeble. If too much fluid goes to a part it is irritated, causing pain, congestion and spasms. Should there be some disease or derangement of the brain or spinal cord or of the nerve itself, so that no nerve force is given off, paralysis is the inevitable result.

It may surprise some to learn that nerve force, the motive power not only of our actions but of our thoughts, the mystic force through which Shakespeare, Milton, Longfellow sang and Titian drew, owes its origin to a fat, a super-fat, as it were, and the air we breathe.

This fat contains—in addition to the chemical elements of all common fats—the elect among the elements, phosphorus and nitrogen. This super-fat of the nerve cells' choice is known to chemists as lecithin, which is found in the form most valuable to the system in milk and eggs. As is well known these are the staple foods for all who require building up physically and mentally. Moreover, they are, together with butter and cream, the forms of nourishment for anyone undergoing treatment for some form of mental defect. Fatigue of the nerve tissue occurs less readily than muscular fatigue as brain cells act independently and we cannot really compare the action of a muscle with the action of the brain, the whole of the brain not being actively concerned.

The fact is realized that the body and mind are closely connected; that a healthy body is necessary to a healthy mind, and a healthy mind

is necessary for a healthy body. "Mind can only be studied with any prospect of advantage by the physiological method," says Dr. Maudesley. Dr. J. Misra of India recognized one essence in a dual activity, that the "mental condition is the state of the material organ and the chemical changes in the organ are the source of mental acts." Be this as it may, we should never develop one at the expense of the other. There is a right way to value the human body and the mind. It consists in neither overestimating nor undervaluing the one or the other. It consists in regarding the human body as the instrument of the mind. God has given to us the most perfect physical instrument in the world. Each part is admirably adapted to some use of the occupant. The more we study the body and mind the more we are amazed at its marvelous adaptability to our uses. We possess the power of independent choosing which involves moral responsibility. All these and many other facts make at least a general knowledge of the nervous system, the form and functions of the brain, absolutely essential in order to understand sickness of the mind or mental disease, and psychoneurosis.

The nervous system is the distributor of vital force. The intimate structure of the nervous system differs from the other tissue of the body. It is composed of a soft pulpy substance which early in life is almost fluid but which gradually hardens with the growth of the body. Two dis-

tingent elements make up its composition, (1) the white substance composing the larger portion of the nervous organs of the body which is formed of delicate cylindrical filaments, termed the nerve fibres, and (2) the gray substance, composed of grayish red or ashen colored cells. Their respective uses are distinct. The gray substance performs an active part in the system; that is, it originates nervous impulses: the white matter on the contrary is a passive agent and serves merely as a conductor of the nervous influences or impulses. The proportion of gray matter to the white is greater in the cerebrum than in the cerebellum or spinal cord. The nervous cords or neurons distributed from these to all parts of the body are made entirely of white matter, though the gray substance appears again in the center of the ganglions. The basal ganglia are small collections of nerve matter at the base of the brain which have to do with the regulation of many special functions. There are three great principal groups of basal ganglia. Three great groups of nerve fibers are also found in the cerebrum which carry the messages to and from that important higher center of the mind. These basal ganglia serve as sort of middlemen to the brain centers. When certain physical acts which are reflex, such as walking, etc., are frequently performed the basal ganglia acquire the ability of carrying on these habitual movements without taxing the higher brain centers, it being only necessary to start the process

by orders from the special mind centers. This accounts for the formation of many habits both good and bad, and explains why it is so difficult to break oneself of a habit once it is formed.

The pons varolii is the bridge of brain matter which unites the various other parts of the brain, connecting the cerebrum with the cerebellum and medulla oblongata. From the medulla oblongata the spinal cord continues downward in the spinal canal of the backbone or spinal column. It is about eighteen inches long and is composed of gray matter and white matter, the gray substance being inside of the cord, instead of on the outside as in the case of the brain. The spinal cord has three protecting membranes, the same as the brain. Inflammation of these membranes is known as spinal meningitis.

The white fibers of the spinal cord are gathered together in six clearly defined bundles on either side, each of which carries on a special work in the transmission of nerve impulses to and from the brain. The spinal nerves come out from the cord on each side and form thirty-one pairs. Each nerve arises from two roots, an anterior or motor root, and a posterior, or sensory root, the sensory root having associated with it a special nerve mass called the spinal ganglion.

In addition to the thirty-one pairs of nerves branching out from the spinal cord, there are twelve pairs or sets of cranial nerves which

originate in the brain. Briefly the special functions of each, according to number, are as follows:

1. Olfactory, the nerve of smell.
2. Optic, the nerve of sight.
3. Motor Oculi—moves the eyeball.
4. Trochlearis—controls the superior oblique muscle of the eyeball.
5. Trigeminal—the nerve of facial sensation, of mastication, and of motion, sending branches to the tear duct, and of tactile sensibility to the tongue. In fact, the sensibility of all the organs of common sense depend directly upon the Fifth Nerve for the special stimuli to which they are adapted.
6. Abduceus—supplies the rectus externus muscle of the eye, with some minor functions.
7. Facial—the motor nerve of all the muscles of the face (not including the muscles of mastication). It has a branch concerned in the sense of taste.
8. Auditory—nerve of hearing.
9. Glosso-pharyngeal—sensory fibers of touch and common sensations are distributed to the pharynx, the tonsils, the posterior palate, the eustachian tube.
10. Vagus, also called the pneumogastric. Its branches are distributed to the mem-

branes of the brain, to the ear, larynx, the heart, lungs, stomach and the liver.

11. Spinal accessory—acts on the larynx, and certain muscles.
12. Hypoglossal—exclusively motor, governing the movements of the tongue.

In further speaking of the reflex action of nerves, the nerves extending back and forth across the spinal column connecting the various incoming and outgoing nerve tracts serve the purpose of creating a short-cut for the passage of nerve impulse. For instance, if one touches something very hot or cold unawares the impressions of danger do not have to pass to the higher centers in order to secure the instantaneous withdrawal of the hand. The sensation in the finger is immediately flashed over the sensory nerves to the spinal cord and here by means of this cross nervous connection, reflex action takes place; that is, the nerves passing to the muscle controlling the hand are excited and at once dispatch the order to the proper muscles to withdraw the hand from danger. This also explains how we can close the eye without thinking when danger threatens. It is also by this reflex action that we cough to remove mucus from the throat, sneeze to throw irritating substances out of the nose and vomit to empty the stomach when nauseated.

Nerve impressions from the skin or other organs of special sensation may excite a muscle

or group of muscles to action in different ways. The sensory impulses may pass up the spinal cord to the conscious sensory centers of the cerebrum over the long circuit and excite to action the conscious motor centers of the upper brain. The majority of common nerve impressions do not travel this long circuit. They go by the automatic or short circuit to the basal ganglia where they are received and where they set in motion the motor nerves going down from the brain to the muscles, just as effectually as if the impulses had been carried to the conscious brain centers.

Again, we possess certain natural reflexes, reflexes associated with breathing and the circulation, whose sensory impulses are transferred to the motor nerves in the medulla. The cerebellum contains reflex centers which regulate posture and equilibrium. Not a single muscle is directly controlled by the lofty motor cells of the upper brain. So all action proceeds from the spine while the orders come from the brain.

The neuron consists of a cell body and its processes or branches. Every neuron possesses one branch for transmitting outgoing impulses. This branch is called the axone. Most neurons possess one or more branches which bring afferent impulses toward the cell body. These afferent branches are called dendrites. Sensory impressions received by the sensory nerve endings in the skin are transmitted over afferent fibers to the cells in the posterior root ganglion

of the spinal cord where they may be transmitted either to a spinal motor neuron to form the reflex arc, or through sensory tracts to the sensory centers of the brain. From no part of the body can nerve impressions passing through the spinal cord reach the brain over a continuous tract. Nerve impulses must ordinarily pass over two or three different nerves in reaching the brain centers.

Nerve impressions are received and originated by the gray matter of the brain and spinal cord. All ganglia contain this gray matter, the cell bodies of nerves or neurons. These nerve cells have nuclei and are held together by a sort of connective tissue which serves as a groundwork or bed and is called neuroglia. In certain nervous diseases and toxic states of the blood this neuroglia tissue is irritated, whereupon it begins to contract down like scar tissue and squeezes the life out of the nervous system, resulting in various nervous diseases, such as spinal sclerosis, etc. It is possible to overcome this state of the neuroglia by the Respiropathic breathing potencies in purifying the blood, causing the glands to carry away the toxins and through the metabolism of the system by the respiratory law, building up new nerve cell and tissue. The white nerve fibers consist of two kinds, those which are covered by a sheath, which serves as a sort of insulation, and other fibers which are not thus insulated. All nerves are supplied with special blood vessels. Nerve

impulses are carried to and from the centers, back and forth, by currents of energy, which is known as prana, or neuricity, which in many respects resembles electricity, and which can be measured and studied much the same as electrical currents, though the rate of transmission is very different.

Physiologists have devised instruments for measuring the rate of transmission of nerve impulse. Passing up the sensory nerve to the brain, nerve impulses move about 160 feet per second; while coming down a motor nerve from the brain the impulses travel about 140 feet per second.

A prominent physiologist has explained the transmission thus: "The nerve impulse is traveling over a live thinking wire; when an incoming nerve impulse reaches a nerve center a marked and measurable delay occurs before the outgoing impulse is dispatched from the center. The advent of an afferent impression by the afferent nerve is a busy time for the center, during which many processes — of which there is very little exact knowledge — are being carried on in it. The shortest period of reflex act has also been measured in a few simple reflex arcs only to show that the delay at the center exceeds in time both afferent inflow and efferent outflow."

While the nerves coming from the brain and spinal cord known as the central or cerebro-spinal system are concerned with the body's sen-

sations, muscular movements and voluntary acts, all the vital processes of the body, including the chemism, are regulated by the involuntary or sympathetic nervous system. This special system of nerves is formed by a double chain of nerve masses or ganglia which are connected together by intervening cords and extend down on either side of the spinal column from a small point of origin near the base of the skull to near the end of the spine. Branches from this system are found in all the ganglia connected with the voluntary or central nervous system.

The sympathetic nervous system has its headquarters in the solar plexus, called the "abdominal brain," the greatest collection of nerve matter to be found in the body outside of the skull. It receives branches from the vagus or pneumogastric nerve in addition to the sympathetic nerves and distributes many fibers to all the vital organs which have to do with the maintenance and regulation of life.

The wisdom of this dual nervous system is shown in the fact that while the mind and muscle of man tire and need rest, the functions of the heart and lungs as well as the digestion and nutrition must of necessity go on without interruption and this is made possible because these are largely under control of the sympathetic or involuntary nervous system which neither naps nor sleeps from the cradle to the grave.

This ganglionic or sympathetic system has no true sentient nerves, but certain mental emo-

tions are referred to the larger ganglions producing peculiar sensations familiar to everyone. This indirect or sympathetic connection between the mental condition and the involuntary organs gives rise to all the common manifestations of emotion or passion, of tears, grief, paleness, of fear, rage, shame, blushing, confusion. These being produced involuntarily by several mental conditions of which they are the exponents, can be artificially induced only by exciting in the mind the actual condition of which they are the proper representatives. For instance, the actor on the stage by training and active imagination throws his mind into the actual emotional state he desires and produces the sympathetic involuntary expressions. The branches of this sympathetic system accompany the blood-vessels even to their capillary extremities, and seem to exert an influence on those mysterious changes which take place in connection with this class of vessels, such as the secretion of fluids by certain glands and direct nutrition of the different tissues.

The medulla oblongata is composed of special centers which handle the reins of life. Its reflex power governs the acts of respiration which are absolutely continuously essential to life. The cerebellum takes no part in the operations of mind. The experiments of Flourens, Louget and others have proved that the cerebellum belongs neither to the sensory nor to the intellectual apparatus, and that it is not the source of

voluntary movements, although it belongs to the motor apparatus, but is the organ for the coördination of the voluntary movements or for the excitement of the combined action of muscles. In this manner it is connected with the chief sensory impulses which have to do with the maintenance of the equilibrium. With the exception of its middle lobe it is itself insensible to irritation. When the cerebellum is diseased or injured the person moves in a confused manner as of sea-sickness, or as if in a state of intoxication. It has not convolutions as has the cerebrum, but is subdivided by many crescentic parallel ridges which, sending down gray matter deeply into the white central portion, give it a somewhat branched appearance. This peculiar appearance has been called the *arbor vitæ*, or the tree of life, from the fact that when a section of the organ is made it bears some resemblance to the tree of that name.

The brain is covered by three membranes known as meninges. The outer one, the *dura mater*, is a fibrous substance lining the interior of the skull and extending down and around the spinal cord. Inside of this is a loose meshwork of delicate fibers, the spider web membrane or *arachnoid*. The third or inner membrane, called the *pia mater*, consists of a thin delicate structure resting directly upon the brain substance. There is found a meshwork of small blood vessels within the inner membrane. The brain is richly supplied with blood vessels and also con-

tains many lymph channels. At the base of the brain these blood vessels form a perfect circle which allows of the free and even distribution of the blood and the equalization of its pressure.

The cerebrum or higher brain is divided into two halves which are further divided into five lobes, viz., frontal, parietal, temporo-sphenoidal, occipital, central, or Island of Reil. In all parts of the cortex (the outside of the brain) the gray matter is found. The various centers of feeling and voluntary action are found on the outside. The centers of thought action are located over to the front while the centers controlling muscular action are located toward the middle of the brain. The centers for the eye, ear and nose are rather to the back and lower part. The weight of the entire brain is ordinarily about one forty-fifth of the body, but the quantity of blood used up in the brain is about one-eighth of that required by the whole body. You can readily see, then, the importance of pure blood and plenty of it. This leads me again to speak of the value of Respiropathy.

According to the Eastern physiologists the brain consists of eight distinct and concentric layers formed mostly of closely packed fibers and of crowds of cells of very different shapes and sizes, the layers differing in the relative proportion of cells and fibers and in the manner of their arrangement. Each cell sends forth processes with which the tissue of certain fibers

becomes continuous. The office of the fibers is to establish communication between the cells. The shapes of the cells and the intricacy of their communications vary with the amount of intelligence.

Between these fibers and cells there are differences of molecular structure implying differences in molecular activity. The cell is where nervous energy is liberated, while a fiber is a path along which nervous energy is transmitted. The cerebrum and cerebellum are places where nervous energy is liberated for the centers, flowing to them along definite channels. The centrifugal fibers of the corpora striata send it to the spinal centers and medullary centers from whence it is diffused over the body. The ceaseless interchange of molecular motion which goes on among the innumerable cells of the brain is for the continual redistribution of nervous energy among the cells and is the objective side of the process of which the subjective side is the recompounding of impressions. For every revived association of ideas there is a nervous distribution between two or more cells along previously used seats of transient fibers and for every new connection of ideas and impressions there is a discharge along new transient lines. Hence consciousness implies a state of tension between many simultaneous discharges.

At first the cerebrum and cerebellum kept pace together in growth, but we find as evolu-

tion advanced that the cerebrum outgrew or overlapped the cerebellum. The cerebrum governs coördination in time and the cerebellum coördination in space, and the extension of correspondence in time at first goes on parallel with the extension of correspondence in space. The cerebrum or great brain forms much the largest division of the nervous mass enclosed in the bony cavity of the skull. It is divided into two halves or hemispheres by means of a great median longitudinal fissure. At the bottom of the fissure when the hemispheres are spread apart can be seen a broad white band of nervous matter (called the corpus callosum) by means of which the two halves of the cerebrum are held firmly together. The surface of the two hemispheres is traversed by many fissures of varying depth. It might be said that the external surface of the cerebral hemispheres appears like a tract of land traversed by many crooked brooks and rivers, producing numberless furrows which are named fissures. The ridges between the fissures are called convolutions, or gyri. It is computed that the extent of the entire surface of the brain with the convolutions unfolded is four square feet, and yet it is easily enclosed within the narrow limits of the skull.

No two brains are alike in the number and depth of the fissures or in the number and prominence of the convolutions. It may be interesting to know that the brain fissures or channels are actually produced by the arteries. The more

work one has to do with his brain the more blood does his brain require. The network of arteries covering the cortex becomes stronger and sinks deeper, producing more and deeper fissures, extending as it were the brain system of irrigation. So the fact is that the higher the order of anyone's intelligence the richer is his brain in the number of convolutions; the higher the position in the scale of intelligence the greater is the amount of arterial blood needed and used by the brain.

To sum up then the strength of the brain, the surface or cortex as made possible by the development in size, number and depth of the cerebral convolutions is the most characteristic feature of the human brain. All authorities agree that it is a well established fact that the so-called central convolutions situated on either side of the fissure of Rolando form the region from which nearly all the motor impulses pass out from the cerebral cortex; hence, it is called the motor zone.

ORGANIZATION OF THE MIND

It will be well to call attention to the plan upon which the human intellect seems to be organized for work. It is now generally agreed both among physiologists and psychologists that the nerve cells, especially those in the cortex of the brain, are individual and relatively independent units. These cells form associations and com-

binations of increasing complexity. The associated groups of neurons form systems and communities and these in turn are organized into clusters and constellations. This organization in fact is that of the mind and not of the brain. It is purely mental, functional, and not in any sense material or anatomical; so that the organization of the human mind may be looked upon as a complex system of specialized and coördinated powers of consciousness presided over by the supreme power and authority of the will.

This leads me to speak of the will, which may be defined as energy in efficiency. The ex-neural energy and the above spoken of associated groups of neurons in their combined energies form what may be termed mind. Thus we see that mind development takes place by coöperation of two sets of agencies. The first may be denominated subjective factors; the second, objective influences. By the subjective factors are meant the fundamental characteristics with which each individual mind is endowed at birth by the quickening of life. As the mind unfolds one of the chief characteristics of its development is the improvement and growth of sense capacity, which involves sensations by their color and tone. If the colors of the tattvas (nature's principles of vibration), their reality and nature were studied a new field for medical science would open. It would become possible to explain why a raving maniac kept in a room of blue will become quieted and a melancholy

person improve in a room of red or yellow; why a steer, or turkey, will become excitable at the sight of red, etc. These effects have occurred and the facts have been registered.

All visible things are an expression of inner states, and we can know these inner states only through motion and emotion. There can be no motion where there is no emotion to produce it either directly or indirectly. All motions are manifestations of energy. Energy is a manifestation of consciousness; consciousness is the highest state of the mind; mind is the vehicle for the manifestation of spirit; spirit is the out-breathing—that “breath” by which the world was created or projected. The life principle of the air, the cosmic energy and oxygen acting upon the life principle in the body, is the specific action of chemicals due to the chemical affinities (harmonies) which has produced mind. It has been previously stated in this chapter that there are three distinct Nâdis, three sets of nerve fibers in the physical body at the basal ganglia, the great main reservoir and the conduits of life force or vital energy impulses. One, that of the Pingalâ, on the right side of the spine, is the conduit of the positive or solar current, and on the left side is the Idâ, the negative or lunar current, the physical, and the Sushumnâ in which these two currents meet is the conduit of the etheric or magnetic energy, the currents of which are passing in the universe from south to north. Man contains all the elements and ener-

gies to be found in the universe in their application to his use. As in the Macrocosm so in the Microcosm.

It may be stated at once that the knowing of mind is through its attributes. If the mind be a form of energy then mind can produce motion in brain tissue, nerve fibers and even in muscles; hence, mind must be a force, or, at least force must be an attribute of mind. That force must be energy in efficiency which as I have previously stated is the will. Will, then, we can say, is the positive side of consciousness and impulse is the negative side. Impulse is mostly responsible for the emotions. Emotions represent a very intimate inter-association between the mind and the body. The person who would acquire a high degree of self-control must begin on the emotions. Never suppress or annihilate them, be glad of them, but rather control and coördinate them. I do not mean simply conventionally. There is an unfortunate class of people who have become conventionally emotional. They have been socially trained to experience only those emotions deemed proper and decorous, they have lost their individuality and originality, they have become mere social automata, mechanically following the fashion; they have but one standard for the regulation of their conduct—What will people say?

On the other hand, if the emotions are not controlled they will eventually evolve into veritable psychic bandits charging around through the

mind in disorderly fashion, taking away or destroying the finer sensibilities, swaying the mind at will and supplanting reason and judgment. The other day I saw a grand characterized woman almost go into a fit of phobia upon learning a bit of gossip about herself which had been peddled about. She had palpitation of the heart, muscle twitchings, froth from the mouth, and a violent headache which lasted for two days. This is a picture of deficient emotional control. It is really an outburst of passion called by the dignified name of righteous indignation. "Persons who have chronic congestion in any one organ of the body; those who suffer chronically from cold hands and feet and pale skin are much more likely than others to become victims of violent emotional outbreaks." (Dr. Saddler.)

It is a known fact that emotions excite the heart to increased action and in a variety of ways produce an extravagant expenditure of vital energy. This is probably due to the fact that when a strong emotion is experienced the higher nerve centers, so to speak, take it for granted that the body will be thrown into more or less violent sympathetic action; thus they anticipate the need of increased circulation and at once start the machinery to going at increased speed. It stands to reason that to balance the circulation and purify the blood will greatly aid in securing the control of the emotions and the best means of doing this is through proper breathing potencies which purify the blood and

through the scientific law of respiration permit the blood corpuscles to carry the oxygen necessary to cleanse the blood and keep the body properly warm.

All the facts pertaining to the influence of the quantity and quality of the blood supply manifest in a general way the real significance of the brain for the intellectual activities. The deeply convoluted and wrinkled rind of gray matter is of more importance than the weight of the brain. This covering of gray matter has been shown to be the physical basis of man's highest and profoundest mental life. Therefore the cerebrum is the material instrument by which the mind acts. All the other organs are subordinate to it.

The reflex action of the brain is like that of the spinal cord, it protects the body by involuntary movements, taking the place of the will when necessary, telling the voluntary muscles to act. The nerve currents play a most important part in our mental life. Deflected nervous energy and misdirected pranic energy cause disorders and defects to the brain and mental faculties. Fixed ideas, too many affirmations and meditations are harmful to the mental faculties, especially to the psycho-physical subconsciousness. Energy directed to proper coördination by breathing potencies will correct bad mental habits, defects of speech, etc.

The breath of air that we breathe, which contains the mighty cosmic energy, prana, is taken up at once by the gray matter of the brain and

the sympathetic nervous ganglia and converted into mental force and nerve power while the properties of the air pass on doing their work with the blood for new tissue growth and purification of the whole system.

CHAPTER III

PSYCHIC SHOCKS—TRAUMA—OBSESSIONS

THE brain cells are extremely sensitive to shocks and variations of pressure. They are also peculiar in that a free supply of oxygen in connection with the rapid removal of waste matter is essential to their activity and efficiency. If the blood supply of the brain be cut off there is an immediate obliteration of mental activity or loss of consciousness. If the supply is inefficient there is a nervous element present and states of fear are experienced.

Neurological science has made a distinct classification of nervous disorders. There are two groups of the "neuroses," or nervous states—the somatoneuroses, and the psychoneuroses. The first includes all the nervous diseases that are the product of actual tissue disorganization. The second comprises ills for which no physical cause can be found, though a number of physical effects are apparent. The difficulties are purely functional, the product of psychical disorder. The psychoneurotic state is generally accompanied by heart palpitations, dyspepsia and insomnia. The psychoneurotics are not insane. There is no physical trouble of the brain; they are not diseased in the physical sense of the word. The impetus that works this ex-

ternal change is technically known as a psychic "trauma" or psychic wound.

A psychic wound or shock may come from any great threatened danger, death of relatives, disappointment in love, uncongenial surroundings and unrealized ambitions, etc. And along with this general mental confusion come the obsessions, the strange aversions and antipathies, even physical disturbances. These things may start into existence a few days after the psychic shock; sometimes they do not show themselves for months or even years after the psychic shock. In certain cases there are no definite obsessions, only a perpetual and indefinable psychic restlessness. In most cases, however, the disordered condition selects some tangible expression. The mind is simply in a queer sensitive state and blindly goes hunting for some pet aversion and the thing selected it settles upon to dislike and fear, after that all the conscious life is now spent in an effort to avoid it. Sometimes these aversions in people appear to us merely as strange and amusing eccentricities.

In certain people mere silence or being alone brings about a nervous crisis. Some have the aversion to light, and others to darkness, and others to high places—they are afraid to sit in a gallery or to stand on the edge of a cliff or be near a high window. It is not the natural sensation of vertigo; it is a nameless pursuing horror which possesses the whole mind. Then there is the mental twist of wanting someone to talk

to constantly. The most pathetic neurotic is the one who lives daily in fear of disease. She never hears of a malady without presently finding that she has it. A slight pain in the stomach is at once magnified into a cancer, and an overfed stomach is still further magnified into heart disease. There are individuals so afflicted with this form of psychoneurosis that it is common to see them sitting quietly alone listening to their heart-beats and momentarily waiting for them to cease.

In nearly all cases of this kind the key to the patient's mental state is the psychic shock or mental twist. This is truly the age of mental twists, but they can be cured by correct modifications of breathing exercises and by re-education of the social consciousness, and the logical faculty. In other words, an interest must be created in life, and the reasoning faculty must be restored as far as these particular things are concerned.

If the cause is mental, either from disappointment in business or love, from worry or fear, or from any other abnormal state, then the cause must be removed, for that which caused it can and will perpetuate it. If the cause be physical in nature from improper environment, lack of food, climatic conditions, these also must be corrected or removed. All these things are secondary causes or may be termed the stimuli which produce the effect from the underlying

cause, the lack of the proper material through which normal mind may be made manifest.

Certain metaphysicians claim that disease is error of the mortal mind. In this they do certainly err. First, it cannot be shown or proved that there is such a thing as "mortal mind," and second, disease is known to be an altered state of the cell, wherein one or more of the mineral compounds is lacking, a condition which may be corrected. Not only can this be done for the various brain cell layers, or sensations in the various divisions of the brain or its organs, but it can also be done for the cells of any tissue or organ of the body. Mind is not the builder of the body, nor the performer of its functions. All these processes are carried on independently of mind; but all may be controlled by mind. It is a well known fact that it is through the brain that the mind influence is brought to bear upon the body, the relations of its several parts to the different manifestations of mind being well understood.

In the normal supply of the mineral compounds to the brain lies the physical secret of continued normal mind action in the several departments of psychic activity. It is well known that the brain is divided into an intellectual, a self-relative and a social division, these several parts being in communication with corresponding parts of the body through nerve fibers. The intellectual division or consciousness occupies the front of the brain, being in connection

through the nerve fibers with the face, arms and hands, which are the expressors of thought. The self-relative division occupies the sides of the brain and is in connection with the respiratory and digestive organs whose office is to take care of the physical body, while the social division, occupying the upper and back part of the brain, is in relation with the social functions of the body.

There is another relation between the mind and brain, that of the five different cell layers of the brain to the five fundamental divisions of the mind: will, imagination, memory, consciousness and sensation. These functions of gray nervous matter extend over the entire brain, so that the intellectual, the self-relative, and social divisions each have their will, their imagination, memory, consciousness and their sensation. This is anatomically and physiologically correct.

Very few people develop their brain cells to their highest possible point. In fact, they do not realize the great extent to which the brain power can be developed. That it is far beyond anything the average man gets out of it is certain. The brain has reserve forces which it holds for the mind's use. They are there dormant, but ready to bring to the individual profitable ideas and new thoughts. These reserve forces may be found in the brain sand of the *pineal* gland where they are waiting to be connected with the brain cells and to set up entirely

different working brain cells. The substance of the pineal gland may be likened unto radium and it would not be far wrong to call this substance which modifies the activity of the mind radium salts. One scientist and physiologist of India went so far as to say that the substance found in the pineal gland was nothing but ether itself in that mode of manifestation for the use of all the departments of being and of the body; that the pineal gland had some regulative influence upon all the ductless glands and the genitals.

On the other hand all mental states are followed by bodily activity of some sort. Thus the relation between mind and body is a reciprocal one—mind affects body and body influences mind. First, by means of chemical hormones which circulate in the blood and lymph and thus come in direct contact with the remotest cells of the body. The mind and nervous system have the power largely to control, regulate and modify the cellular and glandular secretions of the entire body and are thus able indirectly to control the nutrition of all the body cells. It is a recognized physiological fact that the numerous special secretions which are subject to nervous control are all more or less concerned in the intricate work of modifying and regulating the nutrition of the individual cells. In the second place, the mind is able to influence the nutrition of the body cells by the specific influence of mental messages—energy impulses sent out directly over the nerve

tracts to the cell substances. With the possible exception of the blood cells and those of the outer layer of the skin, the epidermis, all the other cells of the body are in actual contact with some minute filament of some nerve process—however remote they may be from the great nerve centers—which are in turn connected directly or indirectly with the brain—the organ of the mind.

The posture and movement of the body also show the effect of mind over body. The courageous intellectual mind exhibits a physical carriage that is both erect and vigorous, the gait is firm and elastic, the physical poise is energized. It represents a normal mind with courage and future hope. In contrast, the physical carriage shuffling along with a weak slovenly gait bears the stamp of mental defeat that has been transferred to the material body. It is the picture of mental weakness, doubt and defeat, and we may also add of a run-down physical body.

Now these changes in function are brought about through the sympathetic nervous system acting upon the circulation, either decreasing or increasing the supply of nutrient materials to and from the glands and tissues, causing the functions of the organs to become normal, or abnormal, according to the character of the emotions and the consequent control of the tissue salts or mineral compounds upon which functional activity depends. The function principles existed prior to the building of organs through

which they now act to produce functional processes. The organs do not generate the forms of motion; it is the mind that generates the forms of motion through polarized or equilibrated energy. Every atom in the body partakes of that motion. Our body is a chemical laboratory and motion antedates all chemical effect; chemical effect also antedates the mental. We are nothing but motion—we can never do anything but move, since we are eternal. How vastly important it is to know how to move or breathe in accord with the law of motion or that subtle influence of the Breath Impulse—the Eternal Life.

Breathing in general by most people is regarded as a mere physiological process as a means of obtaining air or oxygen, and the fact is overlooked that motion is involved, that even the oxygen is essential to life, and the currents of energy in the air are necessary to the mind energies. Motion underlies the entire physiology of the organic functions and senses, as well as mind. It is a fundamental law of nature.

Then why do we hear so much about the control of the movements of mind? There is no limit to the power of thought, but there is a limit for the quality of thought. To control the movements of mind is simply this: The will holds the mind in check and this restrains the scattering of forces through wasteful and discordant activities and thus the pranic currents and chemical changes can flow rhythmically,

which means a gathering of force and strength and electro-magnetic power, the strengthening of potential energy, since every organ and tissue of the body depends upon certain necessary quantities and apportionment or grouping of these mineral compounds to maintain their integrity of structure and functional activity.

It is essential here to draw attention to the *pituitary* body or gland. This is a small reddish gray mass occupying the sella turcica of the sphenoid bone. It is just a little larger than an ordinary pea and consists of two lobes, a small posterior one of nervous tissue and an anterior one resembling the thyroid in structure. The gland spaces are oval, nearly round at the periphery, spherical toward the center of the organ and are filled with nucleated cells of various sizes and shapes, not unlike ganglion cells. The posterior or infundibular lobe contains two active substances, one pressor and the other depressor. The pressor substance in its pure form is called *pituitrin*. This gland helps to govern the power of resistance in the mind as well as in the body. It is by eastern physiologists considered the home of the twelve tissue salts.

The tissue salts build in harmony with those thoughts that become creative things. The proper activity of this gland removes mental cramps and convulsions. It has a very marked influence on the blood pressure and assists in maintaining the integrity of functional activity

which is essential in moulding our body to ease or disease.

It can be said without hesitation of obsessing horrors, mental twists, and psychoneurosis in general that their internal cause can be traced to the fluids of the body, because they spread themselves in all directions throughout the system and easily disturb that which to us is the most sensitive. Solids move downward and those that are soluble will become assimilated and amalgamated into nourishment of the special parts; those that are not will be eliminated from the body. Then it is to the fluids—blood, chyle, electro-magnetic-lymph, saliva, gastric juice, pancreatic juice, bile, synovia, intestinal juice, mucus and serum—in their disproportion in quality and quantity that we must look for the cause of psychoneurosis. The scarcity of the fluids may be brought about by the use of wrong foods and beverages, by waste remaining too long in the system, by improper oxidation and purification of the blood through lack of breathing and the timely distribution of the fluids to their proper places. The genital fluid's office is mutually to influence and constitute a normal thought human being. With the misuse or abuse of these fluids, the electro-magnetic essence of the mental energies is so violently disturbed from its rhythm as often to produce epilepsy in many forms; also obsessions, such as claustrophobia, the fear of shut-in places; agoraphobia, the fear of the open; and phobophobia,

the fear of fear, a terminology being used to classify a strange nervous disorder, only recently recognized as a disease, which manifests itself in various and habitual forms of fear. Thousands of people suffer from this malady, which makes their whole existence one of misery. They are not insane and physicians have found no physical cause in the organs. But as I have previously stated the cause can be traced to the fluids of the body, as it has been demonstrated to my satisfaction in the cure of many such cases through breathing exercises and hygienic laws of the Science of Respiropathy.

Again the mind that is filled with fear, wrong habits of thought, of envy, selfishness, anger, hate, worry, jealousy, checks the normal action of the glands of the body and soon sets up toxins which permit a poison to filter through the system. Your face soon shows the indiscretions of the mind, the twist of the mouth, the wrinkles in the brow, the dull eye, the hard face of envy and hate which smiles fail to hide. Selfishness has its expression in dominance. You can tell the person who does not get sleep and rest enough by the dark circles under their eyes. These marks are apparent without saying more on the subject.

I will only allude to the main points that come up generally in connection with the influence of the mental states upon bodily conditions, especially upon the quantity and quality of the blood supply. First, anger, hate, and other exciting

passions, increase the force of the heart's action, sometimes to an alarming extent. There have been instances of the bursting of a blood vessel from a fit of passion. Again it has been noted that persons are stronger when angry. This is due to the *adrenal* glands located above each kidney which manufacture and secrete a substance called adrenalin. The secretion of adrenalin cannot be controlled by the will. When it is poured into the blood the amount of sugar in the blood will rise in the course of a few minutes between ten and thirty per cent. A strong emotion, such as anger or hate, causes an increased secretion of adrenalin in the glands and simultaneously an increase of sugar in the blood and this sudden accession of sugar supplies the muscle with a much needed food; hence, this is a direct benefit to a person in a rage wishing to exercise stern muscular activity involving conflict or struggle. But the worst disturbance from habitual anger is to the little blood corpuscles, causing them to shrink so that they cannot carry the oxygen necessary to purify the blood and keep the body properly warm. In habitual anger, hatred, and jealousy, causing an excessive action of the adrenal glands, the adrenalin assists in bringing out sugar from the liver stock and too often an occurrence of this has a tendency to thin the blood as the muscle utilizes the increased amount of sugar poured into the blood at the time.

Sorrow, grief and fear cause the blood to

move too slowly and lessen the power to resist disease.

By improvement of the mental states, anger can be controlled. Man is not a weakling. You often hear the expression, "Man is nothing more than a mere man." Those who think that will continue to think and act accordingly. In consequence their actions will be actions of weakness; they will live lives that are small, inefficient. The world through its misunderstanding has justified the idea of weakness and made it natural. Through this belief the inferior have been perpetuated. It is high time that this mistake be corrected. Man is weak in many respects because he has not been permitted to give expression to his strength. We must give expression to our strength and not our weakness. We must express all our power that we are. We are by nature neither bad nor weak. We are wonderfully made and in possession of powers and possibilities that are nothing less than extraordinary. We have mental strength enough to overcome any adversity and temptation. We have moral strength enough to become an absolute monarch or god within our own body. It is a privilege to be all of a man or woman and follow the path indicated by our strength of character and moral good.

Mental therapy must in time pass from the stage of superstition and blind belief to a science, and into a full recognition and appreciation by men and women of science to be

scientifically applied and be permanently established upon a sound basis of scientific physiology and applied psychology. Whoever breathes deeply and fully keeps up the circulation of the fluids. The increasing breath capacity by the breathing potencies of the Science of Respiropathy and its emphasis on the glands and fluids of the body will lengthen the days and purify the life from generation to generation.

We have placed the right estimate upon the human body when we regard it as the temple of the living god within. How sad many people do not keep it a fit dwelling place even for man. The tragedy of life comes when passions climb up to the throne of life and snatch the scepter from the will, causing men to cringe. We must be the masters and have control both of body and mind.

Whether or not the organs of the body or the mind are normal is dependent upon the purification of the blood and upon the activity of the nervous systems. The vitalizing force carried through the nervous systems in conjunction with nervous impulse and that impulse often termed mental can only be supplied from the cosmic energy through breath. Through the breathing potencies of Respiropathy an ample supply of this force is insured, as well as adequate purification—oxidation—of the blood—and the oxygenation of the entire human system.

Plenty of fresh air externally and internally is necessary to live long and to be mentally and physically efficient.

These chapters have attempted to clarify the natural laws of health so that every man, woman and child may become acquainted with the rational teachings and method of Respiropathy.

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